THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—43RD YEAR SYDNEY, SATURDAY, DECEMBER 22, 1956 No. 25

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THE BONE MARROW IN ISCHÆMIA.

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A NUMBER of factors have been found to influence erythropoiesis in man and animals, and the subject has been reviewed by Grant and Root (1952). In the review that follows attention is directed mainly to the action of anoxia. The effect of oxygen deficiency in causing an increase in erythropoiesis has been the subject of a number of studies (Dailwig *et alii*, 1915; Hurtado *et alii*, 1945; Goodman, 1947; Merino and Reynafarje, 1949; Merino, 1950). Complementary investigations have shown the effect of depression that increased oxygen tension exerts on the bone marrow (Tinsley *et alii*, 1949;; Birkhill *et alii*, 1951). Indeed, it has been considered that the normal stimulus for red cell production is anoxia (Minot and Castle, 1935; Whitby and Britton, 1953).

It has seemed most likely that the anoxic stimulus acted directly on the bone marrow; but there are some reasons for rejecting this view. Studies on the effect of anoxia on tissue cultures from bone marrow have shown that lowered oxygen tensions depressed hæmatopoiesis (Rosin and Rachmilewitz, 1948; Magnusson, 1949). Furthermore, in anæmia in man (Birk *et alii*, 1948) and animals (Grant and Root, 1947; Grant, 1948) a lowered oxygen saturation could not be demonstrated in bone-marrow blood.

There is evidence that anoxia can act on the bone marrow through a hormonal intermediary. A number of experiments have been performed in which blood or urine has been obtained from animals rendered anæmic or subjected to anoxia. Preparations of these have been injected into test animals, and erythropoietic responses obtained (Tei, 1938; Krumdieck, 1943; Bonsdorff and Jalavisto, 1949; Loeschcke, 1949; Erslev, 1953; Erslev *et alii*, 1953; Erslev and Lavietes, 1954; Borsook *et alii*, 1954; Gley *et alii*, 1954; Hodgson and Toha, 1954). Similar claims were made by Oliva *et alii* (1949) in relation to man. Grant (1952) even claimed to have observed a stimulating effect on erythropoiesis in baby rats suckled by mothers subjected to anoxia.

Another demonstration of this type was that of Reissmann (1950) on pairs of parabiotic rats, one having been rendered hypoxic. The union between these animals was such that the amount of unsaturated blood passing from the hypoxic to the normal partner was insufficient to lower significantly the oxygen saturation of the latter. None the less, erythropoiesis was stimulated in both animals, as shown by an increased percentage of nucleated red cells in the marrow of both (and not in the control series). Hoelscher and Reissmann (1954) showed that adrenalectomy with or without hypophysectomy did not influence this result.

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Plum (1947*a*) studied erythropoiesis in human bone marrow by tissue cultures in various media, and concluded that there were certain active principles in the serum. Some of these are necessary for the production of red cells and some for the ripening of reticulocytes. Further, plasma from anæmic patients stimulated production of erythrocytes, and the more severe the anæmia, the more severe was this stimulation (Plum, 1947*b*).

In two very instructive cases (Stohlman *et alii*, 1953; Stohlman *et alii*, 1954; Schmid and Gilbertsen, 1955) of patent *ductus arteriosus* with reversed flow and anoxia of only the lower half of the body, polycythæmia has been found. Increased erythropoiesis in the sternal marrow was demonstrated despite normal oxygen saturation of sternal marrow blood. This is further evidence for a humoral intermediary.

In a recent review of the subject, Erslev (1955) concludes that it has been convincingly demonstrated that there is a factor capable of stimulating erythropoiesis in the plasma of animals made anæmic by bleeding. The nature and origin of this factor are, he states, still uncertain. As a possible source of such a hormone or as an additional method of control, studies have been made on the effect of the pituitary gland (Flaks *et alii*, 1938; Feigin and Gordon, 1950; Contopoulos *et alii*, 1954; Fruhman *et alii*, 1954), of the central nervous system (Schulhof and Matthies, 1927; Moehlig and Bates, 1933; Petresco, 1937; Carpenter *et alii*, 1943; Mettler, 1943; Drew and Grant, 1945; Haynal and Graf, 1950; Johnson and Chalgren, 1951; Woolsey, 1951; Grant, 1951; Cramer and Kimsey, 1952; Primrose, 1952; Haynal *et alii*, 1953; Lawrence *et alii*, 1953; Seip, 1953; Boe and Benestad, 1954), and of the autonomic nervous system (Morikawa, 1938; Grant and Root, 1953; Orahovats and Root, 1953). As yet, however, no convincing explanation has been found. But this is a difficult subject to study, because of the ready susceptibility of erythropoiesis to nutritional and endocrinal disturbances of a general and non-specific nature.

Cobalt probably exerts its erythropoiesis-stimulating effect by causing histotoxic anoxia (Birk *et alii*, 1949; Crafts, 1952), and carbon dioxide probably acts similarly (Miller, 1940).

Bonsdorff and Seleste (1949) treated a group of nine anæmic children by obstructing the venous circulation in a limb for one hour. In most, they held that this treatment caused an increase in red cell count which in some cases lasted for some months. This response was interpreted in terms of formation of a hæmatopoietic hormone formed in the stagnant blood.

The effect of ischæmia (as opposed to anoxia *per se*) on the bone marrow has been studied. Reusch (1911) attempted to stimulate medullary hyperplasia by means of ischæmia. A tourniquet applied for two hours daily to the leg of a dog, cutting off all the circulation, failed to cause hyperplasia.

One finds, however, that ischæmia has been considered by different authors in relation to normal erythropoiesis, to *polycythæmia vera* and to secondary polycythæmia. Dacie and White (1949) stated that possibly the actual flow of blood through the marrow was a factor affecting erythropoiesis by controlling the delivery of red cells into the circulation from the sinusoids, perhaps even by affecting erythropoietic activity itself. *Polycythæmia vera* has been considered a manifestation of bone marrow anoxia due to changes in the small vessels in this tissue (Reznikoff *et alii*, 1935; Reznikoff, 1939). However, lowered oxygen tension has not been found in marrow blood obtained from the sternum in *polycythæmia vera* (Berk *et alii*, 1948; Schwartz and Stats, 1949; Hecht and Samuels, 1952). Furthermore, consideration of the different peripheral blood and marrow appearances makes it unlikely that *polycythæmia vera* is a response to the same stimulus as polycythæmia secondary to anoxia (Merino and Reynafarje, 1949; Braun, 1951; Stroebel, 1952). Polycythæmia has been produced by interruption of the carotid sinus and cardio-aortic depressor nerves on both sides in six out of thirteen dogs (Schafer, 1945). Those affected were subsequently cured of polycythæmia by sympathectomy. In man and animals it was held that increased erythropoiesis was found after continued administration of adrenergic drugs (Davis, 1941; Davis and Harris, 1942). It was stated that these two erythropoietic responses were due to vascular changes which, leading to local ischæmia, brought about the action on the bone marrow. Meredith and Kell (1952) found a reduction in hæmoglobin concentration and red cell count following thoraco-lumbar sympathectomy for hypertension. They believed that this reduction was due to increased oxygenation of the bone marrow with the vasodilatation following sympathectomy.

The present investigation has been carried out on the bone marrow of lower limbs amputated because of obliterative arterial disease.

Material and Methods.

Observations have been made on 11 lower limbs amputated because of changes due to ischæmia. Evidence of erythropoiesis was sought in the femur and the tibia. The macroscopic appearance of the marrow was noted in all cases. In 10 of them a microscopic examination of marrow specimens from the lower end of the femur and from the upper and lower ends of the tibia was performed. In only one instance (Case VII—femur) was there any difference between macroscopic and microscopic impressions.

In all the patients studied there was good clinical evidence of pronounced peripheral arterial disease. In three cases arteriographic examinations were performed. In six (including two in which arteriographic examinations were made), anatomical evidence of the arterial disease was obtained by dissection. In 10 cases the ischæmia was chronic and due to atherosclerosis, but in the eleventh the arterial disease was acute and the cause of gangrene was probably embolism.

Table I contains notes from the patients' case histories, together with the relevant pathological findings.

Two amputated lower limbs with no evidence of arterial disease were examined. The first was from a man, aged thirty-four years, who had post-poliomyelitic paralysis of the left lower limb with a traumatic double fracture of the left femur. Examination of the bone marrow revealed no macroscopic or microscopic evidence of erythropoiesis in the femur or the tibia. The other was from a man, aged seventy-three years, suffering from Paget's disease of bone; he had an osteogenic sarcoma of the right femur with a pathological fracture. Examination of the bone marrow revealed no macroscopic or microscopic evidence of erythropoiesis in the tibia.

Discussion.

The limbs studied had been subject to variable but generally severe ischæmia. It seems reasonable to assume that the bone marrow had also suffered some degree of ischæmia. It is considered that the text-book statement that the marrow of the lower part of the femur and the tibia is normally fatty in the adult can be accepted (Whitby and Britton, 1953). The findings in the two non-ischæmic controls studied were similar to the text-book description, and further study of normals was not pursued.

As a complicating factor, slight to moderate evidence of emphysema (sometimes with congestive cardiac failure) was noted in the majority of the patients who underwent amputation in the present series. Shillingford (1950), studying patients with emphysema and congestive cardiac failure, found, in six out of twenty males and in eight of twelve females, red bone marrow in the upper part of the femur and flecks and patches in the rest of the bone. Of the present series, one patient (Case VI), who was noticed to be cyanosed, was the most severely affected by emphysema; in the marrow from the lower end of the femur active erythropoiesis was evident. In another case (Case VII), microscopic evidence was obtained of slight hæmopoiesis in the lower end of the femur. If the results of Shillingford's investigations are borne in mind, these findings are not surprising; it is to be remembered that marrow from the tibia was not found to exhibit evidence

TABLE I.

Case Number.	Patient's Age. (Years.)	Clinical Notes and Vascular Disease.	Hæmoglobin Value. (Grammes *per Centum*.)	Bone Marrow.
I	55	Six months' intermittent claudication. *Diabetes mellitus* for three years. Presented with left leg cold below knee and gangrenous little toe. No pulses palpable below femoral artery. Arteriogram: blocked left femoral artery just distal to origin of profunda.	14·6	No macroscopic evidence of erythropoiesis in lower part of femur or in tibia.
II	58	Eight months previously, onset of intermittent claudication, with rest pain for last three weeks. Presented with gangrene of toes of left foot. No pulses palpable below femoral artery.	16·3	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.
III	64	Three months' intermittent claudication, relieved by left lumbar sympathectomy two months previously. Presented with œdema of the left leg up to knee and gangrene of foot. No pulses palpable below femoral.	12·5	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.
IV	71	Seven weeks' intermittent claudication of left leg with rest pain for one month. Leg blue and cold for one week. No pulses were palpable below the left femoral. An above-knee amputation was performed, and it was noted at operation that the femoral artery was thrombosed.	—	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.
V	82	Diabetic patient with six months' history of intractable infection of right great toe. Tibial pulses absent. Amputation through right thigh; at operation femoral artery was found thrombosed and calcified. Dissection: calcification of femoral and popliteal arteries. The posterior tibial and lower half of anterior tibial arteries were narrowed and calcified.	11·0	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.
VI	75	Pain in left foot for two months. Tips of first and second toes black and blistered. Patient noticed to be cyanosed, and with signs of emphysema and enlarged heart. No pulses were palpable below the femoral. Dissection: an atheromatous femoral artery, moderate narrowing of popliteal artery and pronounced narrowing of posterior tibial artery. The anterior tibial artery appeared healthy.	13·9	Lower part of femur: red macroscopically; microscopically, cellular with hæmatopoietic tissue. Tibia: yellow macroscopically; microscopically, no evidence of erythropoiesis.
VII	70	Right great toe infected for eight months, painful for six months, gangrenous for three months. No pulses palpable on right lower limb. There were signs of bronchitis and emphysema. Dissection: atheromatous calcified right femoral artery, thrombosis of popliteal artery, anterior and posterior tibial arteries narrowed with thickened calcified walls.	—	Lower part of femur: yellow macroscopically; microscopically, evidence of slight hæmatopoiesis. Tibia: yellow macroscopically; microscopically, no evidence of erythropoiesis.
VIII	67	Onset of intermittent claudication nine years earlier; four years earlier left leg amputated with intractable ulcer; two years earlier suffered deep vein thrombosis of right leg, and five weeks before amputation of right leg, right lumbar sympathectomy was performed because of intractable infection of right shin and great toe. No pulses palpable below right femoral artery. Arteriogram: severe atherosclerosis, calcification and areas of narrowing of femoral artery and a block at its junction with the popliteal, which was reconstituted by anastomotic channels. Posterior tibial artery filled well, but anterior tibial artery thread-like. Dissection: confirmed the block and revealed similar findings.	—	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.
IX	71	Presented with left great toe black for three weeks, and history of intermittent claudication. No pulses palpable below left femoral. Dissection: atheroma of femoral artery, and atheroma, calcification and moderate narrowing of popliteal artery. The posterior and anterior tibial vessels appeared relatively normal.	—	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.
X	62	Right great and second toes gangrenous for three weeks. Right femoral pulse palpable, but not popliteal. Arteriogram: probable block in femoral artery and pronounced calcification in its walls and some of its branches. Dissection: atheroma of femoral artery and obstruction about upper end of popliteal artery. Posterior tibial artery narrowed and calcified; anterior tibial artery, slight atheroma only.	—	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.
XI	52	Presented with five hours' pain in left leg, and a white, cold limb. No pulses palpable below left femoral. Left femoral embolectomy performed, but unsuccessful because of thrombus in popliteal artery, and six days after the onset amputation through the left thigh was performed. At the time of operation there was a line of demarcation below knee. Clinical diagnosis: embolism of left femoral artery secondary to myocardial infarction.	—	No macroscopic or microscopic evidence of erythropoiesis in lower part of femur or in tibia.

of erythropoiesis in any patient. None the less, under appropriate circumstances the bone marrow of the tibia is certainly able to undergo hæmatopoietic hyperplasia, and this occurs in a number of hæmatological disorders.

There are some possible explanations for the failure of the tibial marrow to show hyperplasia in the present series of cases. Strumia (1929) has found that marrow changes in the tibia may be unreliable. It has been noted (Custer and Ahlfeldt, 1932) that the tibia is less responsive to stimuli than the femur, ribs, sternum and vertebræ. Hurtado *et alii* (1945) found that when arterial oxygen saturation was decreased to 60% to 70% there was a fall rather than a further increase in hæmoglobin value and red cell count. A condition of bone marrow anoxia exceeding some such critical level may have been present in these limbs amputated because of arterial disease. Against these explanations, the number of limbs studied and the variations in the clinical and pathological findings must be considered. Then it seems fair to conclude that these cases, in which there is no evidence of stimulation of erythropoiesis, provide some evidence that ischæmia does not directly stimulate the bone marrow.

It was mentioned previously that Bonsdorff and Seleste (1949) concluded from observations on anæmic children that an erythropoietic stimulating hormone might be formed in stagnant blood in a limb. In the present series any such factor might have had to exert its effect in a patient weakened to some extent by infection; but those cases in which the hæmoglobin value was estimated showed no elevation in the recorded figures, and the possibility of such a hormone under these circumstances can reasonably be excluded.

Similarly, theories relating the normal control of erythropoiesis to the blood flow in bone marrow receive no support from the present study. Nor is there any evidence that bone marrow ischæmia is concerned in the pathogenesis of *polycythæmia vera* or some of the experimental polycythæmias previously mentioned.

Summary.

A review of the literature indicates that the stimulating effect exerted by anoxia on erythropoiesis is not produced by a direct action on the bone marrow. Consideration has

been given to possible effects of ischæmia (as distinct from anoxia *per se*) on bone marrow.

Observations have been made on 11 ischæmic lower limbs with good clinical evidence of pronounced arterial disease. In a number of these, confirmatory evidence of the arterial disease was obtained by dissection and by arteriography. The bone marrow of the lower end of the femur and of the tibia was examined in these limbs. On the assumption that the bone marrow concerned had suffered some degree of ischæmia, no evidence was found that ischæmia directly stimulated erythropoietic activity.

Acknowledgements.

I am grateful to Dr. I. J. Wood, Dr. J. H. Bolton and Dr. R. J. Walsh for advice in the writing of this paper. For assistance, suggestions and advice I am particularly indebted to Dr. J. D. Hicks, pathologist to the Royal Melbourne Hospital. The assistance of Dr. Hicks's department and of Miss Powell, the hospital librarian, is warmly appreciated. I wish to thank the members of the honorary medical staff of the Royal Melbourne Hospital for permission to examine the histories of the patients concerned who were under their care.

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MANAGEMENT OF SUBNORMAL CHILDREN.[1]

By A. G. CUMPSTON,
Canberra.

DURING the last few years a group of interested parents have formed in Canberra the Subnormal and Incapacitated Children's Association. They have stimulated interest and raised funds to such an extent that a special school (the Koomarri School) has been built for subnormal children and has been working very satisfactorily for the last six months. To qualify for admission to this school a child must have an intelligence quotient below 55 and be aged between eight and thirteen years.

Early this year Dr. D. C. Henchman and myself were approached by the association to form an honorary medical panel. We both felt that if our advice was to be of any value we should have to investigate the whole problem of subnormal children in the Australian Capital Territory and examine as many of these children as possible. In the process of doing this we have become aware of various problems and unanswered questions which we propose to put before you for discussion.

First, we would refer to the problem of case-finding. It appears to be an impossible task to ascertain just how many subnormal children there are in a community. We are told that 1·35 per 1000 of the population have an intelligence quotient below 55. With a total of 10,000 school children in the Australian Capital Territory we therefore expect to find 13 children eligible for admission to the Koomarri School. In actual practice the association, by diligent inquiry has ascertained that there are 15 children eligible for admission. There was no easy way to discover these children, and one wonders how many similar children there are scattered throughout Australia who are functioning at a level below their potential capacity because no facilities exist for adequate case-finding.

The second problem is that of securing early education of the child and of his parents. The present standard of an actual age of eight years is probably correct for a formal school atmosphere such as that of the Koomarri School or of the Opportunity F classes run by the New South Wales Department of Education. But we have in mind the much more elementary education which is so necessary in the first few years of life. The establishment of good toilet habits, teaching the child to feed and dress himself, helping the child to develop language and speech, the problem of discipline, how much and when—these are tremendous problems to parents of retarded children, problems which may lead to rejection of the child and his handicap or to the opposite fault of over-indulgence. In either case the result is the same—a socially maladjusted individual likely to become a charge on the State. Surely some attempt should be made on a national level to educate these parents—to organize them into groups and show them how, with proper methods, patience and perseverance, their subnormal children can truly become independent and useful members of the society in which they live.

Thirdly, we would draw your attention to the need for more adequate medical and psychiatric assessment. During our examination of children in Canberra we were frequently impressed by the lack of complete investigation. Some had been sent to the Spastic Centre in Sydney, others had been examined by a physician or a pædiatrician. I do not think any of them had been referred to a psychiatrist.

In our opinion, an essential prerequisite to education of the parents in how to train their children is an examination of the child by a basic team consisting of a psychiatrist, a pædiatrician and a psychologist, with other specialist opinion and special investigation readily available.

To these problems I would like to add one more—the provision of vocational guidance for these children. Having

[1] Read at a meeting of the Australasian Association of Psychiatrists on October 26, 1955, at Canberra.

enumerated a few problems, I should like to quote from the World Health Organization Technical Report number 75 on "The Mentally Subnormal Child":

> Every child has the right to develope his potentialities to the maximum. This implies that all children, irrespective of whether or not they suffer from mental or physical handicap, should have ready access to the best medical diagnosis and treatment, allied therapeutic services, nursing and social services, education, vocational preparation and employment. They should be able to satisfy fully the needs of their own personality and become, as far as possible independent and useful members of the community.

This statement recognizes that the problem extends far beyond the purely medical aspects. This being so, who is going to give the lead?

There is a real stimulus to progress coming from such organizations as the Subnormal Children's Welfare Association in Sydney and the Subnormal and Incapacitated Children's Association in Canberra, but their influence is all too limited. One is tempted to think that with encouragement and assistance they will eventually develop a highly organized diagnostic and treatment centre, such as that provided by the Spastic Centre in Sydney.

However, in Dr. A. Stoller's report on "Mental Health Facilities and Needs of Australia" we read the following statement:

> Considerable governmental subsidy is being given to such organisations in Victoria, but little elsewhere, and none in most States. It is doubtful whether this movement can be sustained without governmental support and eventual governmental control . . .
>
> State mental health staffs have to be built up to develop a mental hospitals programme, a mental deficiency programme, and programmes for the ageing, for alcoholics, and for forensic psychiatric problems. Also staff is needed to assist local communities develop mental health programmes, conduct public education activities and provide psychiatric orientation for teachers, general physicians and other professional persons who are handling large numbers of people in their daily work.

I think every one of us would agree with these opinions; but from our own point of view as general practitioners asked to act as honorary medical officers to a school for subnormal children, we begin to find it difficult to see the wood for the trees. Our own feeling is that if we had just one clinic in Sydney with a team of specialists and ancillary services specially devoted to the needs of these children, then we should be immeasurably better off. Reference to such clinic would at least establish an accurate diagnosis, increase the parents' confidence and determination to cope with their problems, and provide a basic programme of treatment, both physical and educational, for the general practitioner, teacher, social worker, and interested parent group organizations.

MANAGEMENT OF SUBNORMAL CHILDREN.[1]

By E. M. WANN,
Mental Hospital, Kew, Victoria.

THERE can be few situations more distressing to parents than the realization that their child is mentally retarded. Physical handicap is usually accepted eventually, but mental defect is still surrounded with a certain stigma which makes it difficult to accept, and the distress manifested at such a diagnosis is often almost inconsolable. However, to help both parents and child an early diagnosis is of primary importance.

Those defectives with characteristic stigmata, such as mongols, microcephalics and cretins, are rarely missed. More difficult is the normal-looking child; but the inability to suck, delay in passing the early milestones, inertia and docility or irritability and restlessness are warning signs to the experienced practitioner. Later still, a vacant expression, delay in learning self-feeding and in attaining clean toilet habits, and the failure to acquire speech make the diagnosis all the more probable. I have noticed, too, that lack of an urge to investigate and explore between the ages of twelve months and two years is of special significance. As the child reaches the age of three or four years, intelligence tests are of great assistance. If properly carried out, they give an idea of the child's general intelligence. However, they do not give the complete picture. The child's powers of social adaptation, his emotional development and his volitional power must all be considered. The trained worker can gain much information about these factors whilst giving the tests. As Sarason has observed: "The testing situation is a social situation which the observed relationships between the nature of the stimulus and the overt and inferred behaviour of the individual are as important as the correctness of the response."

It is also important to differentiate a real defect from dulness and backwardness. In dull children the defect is one of educability, inborn, and of a degree placing them between the average child and the feeble-minded. Backwardness implies a defect of the same degree in educability, but is due to lack of opportunity from deprivation of sight or blindness or other extrinsic factors.

One type of case presents an extremely difficult problem in diagnosis—that of the child who may or may not have some degree of mental retardation, but who, because of some severe psychological disturbance, certainly functions as a defective. The following case history will serve to demonstrate this point.

Brian is a handsome little boy, the third child in a family of five. His parents are farming folk of average intelligence, in comfortable circumstances. The eldest child, a boy, is six years older than Brian and said to be developing normally. The second child, born eighteen months before Brian, had severe cerebral palsy and died when aged two and a half years. During this pregnancy the fœtus presented by the breech, and at seven months efforts were made at external version. This manœuvre caused a cerebral embolism in the mother, as a result of which she was unconscious for thirty-six hours. This was thought to be the cause of the infant's severe brain damage.

Whilst still in indifferent health and trying to cope with her severely handicapped baby, the mother, to her dismay, became pregnant with Brian. She felt she had already sufficient to cope with, and also feared that the child might be defective as well. To make matters worse, abortion threatened, and she was more or less an invalid from the third to the sixth month. Brian was born ten days after the expected date, but labour was normal and of short duration. As lactation failed, he was bottle fed from birth. He was a "good" baby who rarely cried, and seems to have gained weight satisfactorily. He spent most of his time out of doors in his perambulator alone, for during his first year his mother was occupied with her spastic child and with her household and farming duties. His "milestones" were all delayed. He sat up at eight months and crawled at eighteen months. Walking was not mastered until the age of two and a half years and speech not at all, though the parents state that he did say a few words at twelve months which he has since forgotten. Now, at four and a half years, he is still incontinent of urine and fæces and has to be fed.

Behaviour disorder became evident at three years. One day he suddenly started to scream, apparently for no reason, and continued to scream for over an hour. He wandered about whilst screaming, but showed no sign of violence. The attack ceased as suddenly as it began, but similar attacks occurred with increasing frequency during the next twelve months. Finally, one attack was so severe that he was admitted to hospital for investigation. During his stay in hospital no screaming fits occurred, but he became withdrawn, refused to eat, lost weight, and contracted a respiratory tract infection which almost proved fatal. When he returned from hospital he found that the next child, a girl, had arrived. At first he took no notice of her, and was very quiet and withdrawn; but before long the screaming attacks recurred, though they were less prolonged and less frequent than formerly. At the same time he became so aggressive towards his young sister that the parents were afraid to leave them alone together. It was also noted that he became more solitary in his habits and frequently wandered from

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home. With the arrival of another sister his conduct deteriorated further, and finally he was certified as a mental defective.

On his admission to hospital he wandered aimlessly about and refused to eat for the first few days. However, he finally allowed a nurse to feed him, and later still he would "line up" with the other children for his mid-morning orange juice. He still takes no interest in the ward activities, and is usually to be seen, a rather forlorn little figure, sitting or standing at the edge of a group, gazing into space. Deafness was considered, but excluded after audiometric testing and ear examination, and also by careful observation of his behaviour during the testing. He made no effort to compensate for his lack of speech by projective vocalization of sound or improvisation, nor did he use gestures. His responses to sounds of varying intensity were inconsistent, and he made no attempt to compensate for auditory disability (for example, by giving extra attention to visual clues), nor did he give any attention to the facial expressions of the examiner. His play throughout was solitary, unimaginative and aimless. An attempt to evaluate his intelligence was made by the use of the Hiskey Nebraska test of learning aptitude and the Stanford Binet Scale. He made no attempt to cope with any of the items in either test. His social development (estimated by the Vineland Social Maturity Scale) has not yet reached that expected at the two-year-old level.

Thus we have a child who functions as a mental defective. There is probably some degree of retardation, but we believe that the emotional disturbance, possibly the result of maternal rejection, is playing a large part. Correct diagnosis in cases like this is important, for the psychologically disturbed child requires something more than a training programme planned for imbeciles.

Early diagnosis and assessment of the degree of defect is, then, the first essential. After this, provision must be made for the child. Those with the severest grades of defect should be segregated as soon as possible. Nothing but distress and family complications can follow attempts at keeping grossly deformed, idiot children in the home. Too often the mother is unable to give the nursing care necessary, and her efforts to do so adversely affect her normal children and her relationship with her husband. The home is no longer a home, but a place where all endeavour and effort are centred around an individual who can contribute nothing to the welfare and happiness of the unit. However, when we have advised and had accepted institutional placement, our work is not ended. Continued support of the parents is required to allay feelings of guilt, first of all for producing a defective child, and then, apparently, for abandoning it. I often feel that our most important work, from a social and community point of view, should be this help and support of the parents.

One group of defectives I should like to exclude from very early placement is the mongol. Mongoloid children have a greater chance of developing to their full potential if, in their early years, they receive individual care and attention in their own homes. In infancy and early childhood they require little more attention than normal children. They are lovable and affectionate little people, and give a great deal of pleasure to those who care for them, rarely at this age upsetting the family routine. However, if home placement is decided upon, from the beginning it should be stressed that the child will always be defective, and that later on special training at day centres and finally institutional placement will be necessary. It should be possible to educate parents to accept this as the child's future, just as they accept the fact that their normal children grow up and leave home. Knowing they have given their child the best possible chance in the earlier years should make the adjustment easier.

The medium and higher grade defective may require institutional placement later, but in childhood daily attendance at special centres usually suffices. Here mental and aptitude testing will aid us to give the child the best possible training. One point should never be forgotten, especially by those of us who work with these children continually and may therefore become rather divorced from normal development: a training centre or school may implant decent habits and teach the elements of useful knowledge; but it cannot convert a feeble-minded child into a useful adult. However, many of the higher-grade defectives, provided that they are socially adequate, may later perform useful work in the community. To this end many more hostels are required, where, once the initial training is completed, they can live and go to work daily, and still receive supervision and direction.

In Victoria most of the special day centres are run by the Helping Hand Association. This originated as a voluntary organization, run by the parents of defective children and others interested in their welfare. Now, however, the centres are partly financed by a government grant, and the training given is supervised by the Mental Hygiene Authority. One of the best aspects of these centres is the parent groups associated with each. Here the parents meet and talk, and by discussing their similar fears and anxieties, and from sharing a common problem, gain comfort and support. Here, too, the need for education to a proper realization and acceptance of their child's handicap can be met by lectures and discussions led by people trained in the field. Eventually many of the children attending these day centres are admitted to institutions such as the Children's Cottages at Kew, and I have marked, time and again, how well their parents have adjusted themselves to their child's limitations. Needless to say, children who have had the advantage of day centre training, when admitted to institutions, settle down and are far happier than those admitted from the sheltered seclusion of their own homes.

I have mentioned early diagnosis and provision for care and training as the first measures to be taken in the management of the mentally retarded child. One must also consider medical treatment. Curative measures are almost negligible in their results. Thyroid gland extracts will improve the physical condition of the congenital cretin, but in most cases will not influence mental development. Other endocrine extracts have been tried with little or no apparent success. In this connexion I should like to stress how useless it is to prescribe thyroid for the mongoloid. Not only does it have no beneficial effect, but often it turns a docile, friendly child into a more irritable and emotional one, so increasing management problems.

In cases of congenital syphilis the usual anti-syphilitic treatment often arrests the progress of the disease and so may prevent any further mental deterioration; but it seldom results in a real mental improvement.

Attempts should, of course, be made to control epileptic seizures by the use of anti-convulsants. Such drugs as "Dilantin", "Mysoline" and "Tridione", in addition to the well-tried phenobarbitone, certainly reduce the incidence of fits and are often of service when the instability of the nervous system shows itself by restlessness, emotional upsets and outbursts of temper, for, by their quieting effect, they make training easier. Recently the work of Noce, Williams and Rapaport prompted us to use reserpine on our low-grade, excitable, destructive patients, and the results in some cases have been so encouraging that we believe further investigation of the use of the drug should be made. The following case is illustrative of the type of response noted:

Nelly was an excitable, sixteen-year-old idiot, destructive and dirty, and so restless and given to wandering that mechanical restraint had sometimes to be used for her own safety. Reserpine therapy was commenced four months ago, and within a month of beginning to take the drug she would sit quietly with the other patients at table, and go to the toilet willingly under supervision. She has since learnt to feed herself, and though she still cannot speak and has little comprehension of speech, she is generally more docile and manageable. No longer does she destroy her clothing and bedding and no wandering episodes have occurred. It is hoped that some form of occupational therapy can soon be tried. Nelly is still an idiot, but she now functions as something like a human being.

Zimmerman, Burgemeister and Putman reported encouraging results in the effect of glutamic acid on intelligence. They found that the administration of the drug for six months caused a definite increase in intelligence of up to 20 points in the intelligence quotient, averaging about six. A ceiling effect was produced after variable time, and

when administration of the drug was discontinued, the intelligence quotient tended to regress slowly to the original level. However, these reports were balanced by the work of Quinn and Durling; they found that the improvement noted with glutamic acid was not significantly different from the results obtained in control groups. Further investigation is evidently required before results can be assessed definitely. We have carried out no controlled work on the use of the drug, but the impression gained from its use, particularly on mongoloids and epileptics subject to *petit mal* seizures, is that it caused no improvement.

All associated defects should, of course, receive adequate treatment; defective hearing and vision can often be helped and orthopædic handicaps relieved. Good general health can be fostered by a well-balanced diet, plenty of fresh air and sunshine and the avoidance of serious infection. Such measures will not decrease the degree of defect, but they will help the child to function at his full potential.

Medical treatment is therefore an adjunct to training in the management of the mental defective. Training programmes will vary with the grade of defect. Much has been written about the education of dull and backward children and the training of the feeble-minded, but relatively little about the education of those in the lower grades. Some of the methods we are using for the lower grade defectives at the Children's Cottages, Kew, may be of interest.

Our training programme commences in the infant nursery, and its aim is to develop a well-adjusted child with firmly established feeding habits. We consider "mothering" of primary importance. The staff is kept as permanent as possible and the staff-patient ratio (one to five) is high for an institution of this kind. Older defective patients have also been delegated to the ward, and have been trained to feed the children, and, above all, they are encouraged to pet and nurse them and generally take an interest in them. The response of the babies (mostly mongoloids admitted a few days after birth) has been so good that, not only has the death rate fallen from over 80% to about 5% of those admitted in this age group, but the babies themselves are happier, more active and more responsive. Those who have passed on to the toddlers' ward from this nursery during the past two years are responding to training in a way never expected by a staff who previously had considered caring for bodily needs the only requisite. A side result has been the general improvement in the working patients, many of whom presented difficult behaviour problems, for at last they have an outlet for their natural affection and maternal instincts.

With the young babies feeding is usually a problem. Many suck poorly and indeed come to us tube-fed. Tube feeding is never continued unless it is indicated by an urgent medical complication, and though the first feeds may take up to an hour and a half to give, we have rarely had a failure in teaching an infant to suck. At five to six months educational diet and spoon feeding are commenced; taking from a spoon may take weeks to establish, but again failures are exceptional.

Whilst these feeding habits are being taught, we ensure that the child gets as much fresh air and sunshine as possible and has ample opportunity to kick and move generally; simple toys and rattles are provided, particularly those that make a noise. Toilet training is commenced when the child can sit up securely (usually at about the age of eighteen months), but is not intensive until he moves to the toddlers' ward.

The move to the toddlers' ward takes place when the child can at least crawl actively. A few, of course, are so severely handicapped that no training is possible, and these are moved to a ward where their nursing and medical needs are met. For our main group of toddlers an intensive habit-training programme commences, encouraged, however, by the same emphasis on "mothering". Clean toilet habits, self-feeding, dressing and undressing, good manners and satisfactory group behaviour all receive attention. The training is conducted by mental deficiency nurses in association with a therapist. Results are slow, but with patience most of the children will have satisfactory personal habits by the age of five or six years. The therapist takes a group of the more advanced children daily and introduces them to the group activities of an elementary kindergarten programme. With these, as with all children, a strict routine is essential; even a minor disturbance in this respect will upset a child's progress. For a small part of the day the therapist takes single children with behaviour and emotional problems, hoping by individual attention to prepare them for group work.

At about the age of eight years another change is necessary. The more advanced children are sent to the school-children's wards and the less advanced to wards where occupational therapy and training is the keynote.

The school is staffed by the Education Department and comprises a kindergarten and primary section. In the kindergarten the usual pre-school activities are conducted, the emphasis being on learning through play. This section is excellently run. The curriculum of the primary section is laid down by the Education Department as part of its programme for special schools. As our experience has widened, we have become more aware that the attempt to teach children with intelligence quotients of 50 and below the rudiments of a formal education is a waste of time. No matter how patient or modified the approach, few, if any, of these children will ever learn to read and write, and fewer still to add, subtract and multiply, all attributes of little value if the child is to spend the remainder of his life within the institution.

Children who could profit from more formal teaching should not be educated with imbeciles, but should be transferred to a centre catering for the higher grades; or, if they are to remain at Kew, separate provision must be made for them. Much discussion is required to have the present official curriculum modified. I would like to say that some of our teachers have appreciated this fact, and gradually more stress is being laid on handcrafts, speech training, musical activities, gardening and so forth.

Many and varied are the activities of our occupational training centre. Children who have had some kind of training in the pre-kindergarten groups continue their activities and later are introduced to handcrafts such as clay and plasticine modelling, cane work, sewing and rug-making. As they reach adolescence, training for the work they will carry on in the institution begins. The girls are taught laundry work, sewing, domestic work and elementary infant care; the boys carpentry, gardening, tailoring, painting and boot-repairing. Once a certain level of achievement has been reached they actually go to work in the wards, gardens and artisan establishments of the institution. They are paid a small gratuity, which gives them pocket-money to buy at the hospital kiosk any extras they may fancy. At present boys who promise to function efficiently enough to work in the outside community are not trained at Kew, but are transferred to the Training Centre at Bendigo, and the girls to the Janefield Colony.

Children who have not had the opportunity for early training in our institution or at some other centre present a different problem. These children's possibilities and limitations are explored by observing them at play. They are often noisy and destructive and present various behaviour disorders; but these very faults can often be used to build up a more stable character, provided they are "worked through" and not suppressed. After observation, and if possible after assessment by a psychologist, these children pass into the groups for which they are considered most suitable. Each child is accepted at his own level of achievement into a programme geared to his own individual needs. With handcrafts our concern at first is not so much the training of a child to make a good article, but rather to make him feel better in body and mind as a result of the activity.

To balance the severely practical nature of training, time must be given to recreational activities: games, excursions, holidays, evening and week-end entertainments, such as films and games, are all included, and trained patients and those in training all participate. The activities are

so planned that all children can enjoy them according to their capabilities and limitations. Their educational value should be noted; games and sports develop a sense of perception and train the will, and offer excellent opportunity for social development. Indeed, physical training of all kinds is important. The low-grade defective is apt to be solitary, with no idea of the coordination and combination necessary even for games. Here ball games, such as rounders and football, and skipping are useful in developing the upper and lower limbs; marbles are good for finger training; dancing improves coordination and diminishes tricks of gait; simple daily exercise in the form of walks and gymnastic activities will promote bodily health.

Musical activities provide a most valuable opportunity for self-expression. Most defective children appear to be susceptible to rhythm, provided it is decisive and regular, though the response is more pronounced to vocal than to instrumental music. Thus we use music as a socializing medium for encouraging the child to take part in other activities; so often the first signs of response are spontaneous movements to express rhythm. We also use it for group work of all kinds—singing, percussion band and dancing. Our therapists have observed that, with a completely untrained group, simple spontaneous movements, such as rocking and clapping to rhythm, are expressed; the low-grade child appears to reach his peak with marching, clapping and arm swinging, but the higher-grade imbecile can be led from simple rhythmic movements to good performance of quite complicated square dances.

The possibilities of an occupational and training programme for the lower grade defectives are unlimited, and the good therapist is continually devising ways and means to meet her patients' needs. On the success or failure of her work depend the whole tone and spirit of a defective colony.

FACE PRESENTATION.

By ANNE MARTYN.

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THE ætiology and outcome of labour in face presentation have been the subject of considerable controversy in recent years. In view of this, it was decided to review the cases of face presentation at the Royal Women's Hospital, Melbourne, during the five-year period from June 30, 1949, to June 30, 1954.

Incidence.

During the period under review, 29,676 booked patients were delivered in the hospital; in 95 of these cases, the fœtus was presenting by the face. This gives an incidence of one in 312 deliveries, a figure high in comparison with those of other reports (see Table I).

Ætiology.

The various factors which are stated commonly to predispose to the development of face presentation include fœtal abnormalities, hydramnios, posterior position of the occiput, contracted pelvis, multiparity, a large fœtus, prematurity, *placenta prævia*, short cord, and an increase in the extensor tone of the fœtus. The influence of these factors in the cases of face presentation under review will be examined.

Fœtal Abnormalities.

There were 10 cases of anencephaly, an incidence of 10·5%. There is no doubt that anencephaly is a cause of face presentation, there being no cranial vault to engage in the pelvic brim. Hydramnios was present in five of these cases. This is in accordance with the finding of Macafee (1950) that hydramnios is not invariably associated with anencephaly. These 10 cases of anencephaly will be excluded from the further analysis of the present series.

Hydramnios.

Hydramnios was present in three further cases, an incidence of 3·5%. One of these was a case of mongolism in conjunction with a primary face presentation. The remaining two were cases of primary face presentation in which no other abnormality was present. It would seem unlikely that hydramnios played any part in the causation of the malpresentation, but it is possible that it resulted from the primary face presentation, owing to inability of the hyperextended fœtus to swallow the *liquor amnii*.

TABLE I.

Author.	Hospital.	Incidence.
Groenig (1953)	Louisville General.	1 in 671
Hellman, Epperson and Connally (1950) ..	Johns Hopkins.	1 in 468
Posner and Cohn (1951) ..	Bronx.	1 in 806
Tucker (1950)	Chicago Maternity Centre.	1 in 620

Posterior Position of the Occiput.

A vaginal examination was performed on the majority of patients immediately after their admission to hospital. In 18 of the cases in which delivery was by the face, the vertex was presenting in the occipito-posterior position on the patient's admission to hospital—an incidence of 21%.

A series of 1000 consecutive cases in which the occiput was directed posteriorly on initial vaginal examination was analysed, and it was found that full extension to a face presentation occurred four times. It is likely that factors producing deflexion in cases of occipito-posterior position may eventually cause extension of the head to produce a face presentation.

Contracted Pelvis.

A contracted pelvis was present in three cases. The radiological criteria of pelvic contraction accepted were those of Macdonald (1953). In two of these cases delivery was effected by Cæsarean section, and in the other by the application of forceps after craniotomy. However, in one of the babies delivered by Cæsarean section increased extensor tone persisted for eight weeks. It would appear, therefore, that this rather than the contracted pelvis was the cause of the malpresentation.

Multiparity.

A high degree of multiparity has been suggested as a predisposing factor to face presentation. In the 85 cases reviewed, 25 patients were *primigravidæ*, and 60 were *multiparæ*. Thirteen of these *multiparæ* had been delivered of five or more babies. These findings were compared with those of 500 consecutive normal deliveries (Table II), and it will be seen that multiparity did not appear to be a factor in the production of face presentation.

TABLE II.

Parity.	Face Presentation.	Normal Delivery.
Primigravidæ	31·0%	27·0%
Multiparæ	69·0%	73·0%
Multiparæ (five or more pregnancies) ..	13·6%	16·0%

Size of Fœtus.

In the present series, 22 babies weighed over eight pounds at birth, an incidence of 25·8%. This was hardly different from the overall hospital incidence of 26%, and shows that a large baby is not a predisposing factor in face presentation. However, there were 13 babies in the series weighing less than five pounds eight ounces. This incidence of 15·2% is considerably higher than the overall hospital rate of 5·4%, and would appear to be significant.

Placenta Prævia.

There was one case of face presentation associated with *placenta prævia.* This was a type II *placenta prævia* (Browne, 1946) attached to the posterior uterine wall. No cases of face presentation were found among 24 consecutive cases of *placenta prævia* in which an ante-partum diagnosis was made by radiological means.

Cord Around the Neck.

There was only one case in which the cord was reported to be looped around the fœtal neck. There was no report of an abnormally short cord.

Increased Extensor Tone in the Fœtus.

The importance of increased extensor tone in the fœtus in the production of face presentation has been stressed by White (1954). In four babies in the present series the condition was confirmed by the maintenance of the extended attitude for several weeks after delivery.

There were nine other cases of face presentation diagnosed early in labour, when the cervix was dilated less than three fingers' breadth. These would appear likely to have been primary face presentations, and may have been due to increased extensor tone in the fœtus. The fact that the hyperextension did not persist after delivery is of no significance. White (1954) points out that the degree of extensor tone which is sufficient to keep the fœtus in an attitude of extension in the *liquor amnii* may not be great enough to maintain this attitude against the force of gravity.

In a further six cases the face was the presenting part on the patient's admission to hospital, but the cervix was one-half or more dilated, and it cannot be stated whether these were cases of primary face presentation.

Unexplained Cases.

There were 28 cases in which the vertex was presenting other than in the occipito-posterior position, and in which none of the above-mentioned causes for the subsequent development of a face presentation could be found. In 12 the cervix was one-half or more dilated at the time of the initial vaginal examination, and an error in diagnosis is unlikely. There were seven cases in which the brow was the presenting part on the patient's admission to hospital, and in which there appeared to be no predisposing factors. The percentage of unexplained cases in the series was therefore 36·8.

Outcome of Labour.

The presentation on initial vaginal examination is indicated in Table III.

TABLE III.

Presentation.	Number of Cases.
Vertex	49
Face	21
Brow	8
Face (second twin)	1
Transverse lie	1
No vaginal examination	5

Of the cases in which a face presentation was diagnosed on first examination, the positions are shown in Table IV.

There were four cases in which the diagnosis of mento-posterior position was made on the patient's admission to hospital, and there were two further cases in which the brow was presenting, and in which later extension to the mento-posterior position occurred. Of these six cases, the chin in four rotated spontaneously to the anterior position, while in the other two it remained persistently posterior.

The average duration of labour in the *multiparæ* was ten hours, and in the *primigravidæ* nineteen hours. Early rupture of the membranes seldom occurred.

Delivery was effected in one of three ways—spontaneously, by forceps application, or by Cæsarean section.

Sixty-one of the total 85 patients were delivered spontaneously, and in two of these the chin had rotated from a mento-posterior position. In one case, a manual rotation from the transverse to the anterior position was performed when the cervix was three-quarters dilated, and the patient proceeded to a normal delivery. Thus, in the majority of face presentations spontaneous delivery may be expected.

There were 19 cases in which delivery was effected by the application of forceps. In nine of these the indication was delay in the second stage of labour, three being cases of transverse arrest, and three were cases in which spontaneous rotation from the mento-posterior position had occurred. The forceps were applied for fœtal distress in six cases, for pre-eclampsia in two, and for teaching purposes in one. In the remaining case the forceps were applied after craniotomy. This was a case of fœtal death *in utero* in association with a contracted pelvis.

TABLE IV.

Position.	Number of Cases.
Left mento-anterior	5
Left mento-transverse	3
Left mento-posterior	1
Right mento-anterior	3
Right mento-transverse	6
Right mento-posterior	3

Five patients were delivered by Cæsarean section. The indication in two of these was arrest due to a persistent mento-posterior position. The pelvis in each case was of average size. One of these patients was admitted to hospital a year later at full term with the face presenting again. An elective Cæsarean section was performed. In the remaining two cases, the operation was undertaken for contracted pelvis.

Fœtal Wastage.

With the adoption of a conservative policy towards the management of labour in face presentation, the fœtal loss was six. This excluded the cases of anencephaly. There were two still-births and four neonatal deaths. In four cases death was due to prematurity and in one to manipulative obstetrics, and in the other, intrauterine death occurred during labour. The fœtal wastage was therefore 7%.

Conclusions.

Various factors have been suggested as predisposing to face presentation. In the present series it was found that anencephaly, prematurity, posterior position of the occiput and increased extensor tone in the fœtus were ætiological factors. Multiparity, *placenta prævia*, a large fœtus, and abnormalities of the cord appeared to be factors of no significance in the production of this malpresentation. Hydramnios did not seem likely to be a cause, but may be a result of face presentation.

There were a considerable number of cases of secondary face presentation in the series. This is contrary to the statement of White (1954) that "secondary face and brow presentations are very rare, if they occur at all". The cause of the majority of secondary face presentations is obscure.

In the majority of face presentations spontaneous delivery will occur. Although the mento-posterior position is unfavourable, rotation to the anterior position commonly occurs without interference.

The duration of labour is not increased in cases of face presentation, and early rupture of the membranes is not common.

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THE USE OF X-RAY EXAMINATION IN MEDICO-LEGAL AUTOPSIES.

By KEITH BOWDEN.

From the Coroner's Department, Melbourne.

IN the steep bank of a bend in a river in a country district a farmer discovered a partly exposed skeleton. He reported his discovery to the police, who excavated the area and recovered as much of the skeleton as they could find. A search of the sandbank on the opposite side of the river, a little further downstream, led to the additional discovery of portions of the skull. Examination of the remains revealed them to be portions of the incomplete skeleton of an adult female. A large part of the skull and of the facial bones was still missing. However, there was available for examination a portion of the lower jaw and a part of the vault of the skull. The lower jaw was incomplete on the right side; there had been a complete fracture about half-way along the body, and the portion of the right jaw posterior to the fracture could not be found. The right parietal bone was fractured and there were three separate pieces of parietal bone which could be fitted together. However, as the skull bones were weather-worn and bleached, and as there were numerous large boulders in the river below where the missing part of the skeleton was embedded in the bank, it was difficult to say whether these fractures, in the vault of the skull and in the jaw, had occurred before or after death. It was considered, as the skull had become detached from the rest of the skeleton and had probably fallen onto the boulders in the river below, that the skull bones could have been fractured in that way. It was not possible from the scanty remains, at this stage of the investigation, to express an opinion on the cause of death. X-ray examination revealed a small opaque object, which was thought to be a single pellet of small shot, embedded in the mandible close to the fractured end on the right side (see Figure I). The opaque object in the broken end of the mandible was recovered by breaking away more of the bone under a hand lens. It appeared to be a pellet of shot, round on one side and flattened on the other; it measured 0·07 inch in diameter. The pellet of shot was handed to Inspector Hobley of the Police Scientific Department; it was found to be made of lead and to possess the weight and general characteristics of a pellet of Number 10 shot. The conclusion was then reached that the fracture had probably occurred during life, and that the woman had died as the result of a gunshot wound of the head.

The whole of the recovered remains, including the dirt and other debris which were found to have some other radiologically opaque particles, were either washed carefully or were panned in a shallow dish, as in washing for gold. However, nothing of further value was found. The police authorities then decided to dig up the soil in the area where the body was discovered and to search this soil for pellets of shot. Six sacks of dirt were washed in the river by means of sinking a tub just beneath the surface of the water. The six sacks of dirt were eventually reduced to a volume which would fill a kerosene tin. A watch-glass full of this material revealed 14 more similar pellets to that recovered from the mandible. The conclusion as to the cause of death was then considerably fortified.

A portion of a human female scalp was later found some distance up the river from where the body had lodged. It appeared probable that the woman had been shot further up the river than the spot where the skeleton was found, and that the body had been washed down the river and had subsequently become embedded in the bank at the river bend. This would account for the missing portions of the skull and face.

In this case, if the recovered bones had not been examined radiologically, the cause of death would never have been established.

Of the various ways in which radiological examination may be employed in medico-legal autopsies, the most useful one is in the finding of bullets. Those who are accustomed to searching in dead bodies for bullets or for fragments of bullets know how difficult this may be. X-ray examination may save much time and dissection.

For example, a man was shot three times on the left side of the chest. Two bullets penetrated the chest cavity. The third bullet passed through the left scapula, and, at first sight, appeared also to have entered the chest. A most useful procedure in the location of bullets is to pass a probe along the track that the bullet has taken. This investigation has its pitfalls, and these led to difficulties in this particular case. It was not easy to follow the course of the bullet that penetrated the scapula. In probing the track of the bullet through the scapula, the probe was unknowingly pushed through some damaged intercostal muscles into the thoracic cavity beneath the scapula. When the chest was opened in the routine way during the autopsy, the discovery of the track caused by the probing led to a vain search for the third bullet which was thought, in error, to have penetrated the chest. A two hours' search in the middle of the night failed to disclose the whereabouts of this third bullet, although the first two were readily recovered.

Radiological examination of the body the following morning revealed that the bullet was lying in the muscles of the back, to the right of the mid-line, beneath the right scapula, practically opposite the entrance hole through the left scapula. It then took less than two minutes to recover the bullet. The difficulties involved in having this body removed to the nearest public hospital for X-ray examination were slight compared with the difficulties at autopsy in trying to locate the bullet. Without X-ray examination, in all probability, it would not have been found.

Some years previously the bodies of two men were found in a river; putrefaction and decomposition had commenced. They had been dead for approximately three weeks. Death in each case was due to bullet wounds. The first victim had been shot both in the head behind one ear and in the vicinity of the left knee. The second had been shot in the chest, and an attempt had been made to dismember his body. There was a large wide opening down the front of the chest and of the abdomen. The viscera beneath had been exposed and partial disembowelment had been performed. In the case of this second man, a bullet had lodged in the muscles of the back beneath the right shoulder blade, and, after a long search, the bullet could not be found. As an aid in the localization of this bullet, it was decided to examine the area radiographically. When this was done, a second bullet was unexpectedly found in the body at the back. This second bullet had apparently entered the abdomen in the upper mid-line region, but as an attempt had been made to dismember the body, the entrance bullet hole had been destroyed and, at first, this bullet wound was overlooked. Recovery of the bullets and their subsequent microscopic examination and comparison by the ballistic experts revealed that three bullets had been fired from two dif-

ferent weapons. The discovery, recovery and examination of the bullets then shed valuable light on the crime, and implied that the police investigating this case had to search for two offenders.

Bullets or their fragments may be overlooked. The dead body of an unknown man, badly decomposed, was found in a river at the bottom of a very deep gorge. Examination revealed gross pulping and shattering of the skull. There was a ragged wound near the right eye. Because of the decomposition it appeared as though both the wound and the shattering of the skull could have been made by the fall from the top of the gorge onto the rocks below. Owing to the state of decomposition and of post-mortem change, it was not at first realized that the wound had been made by a bullet. It was considered that the deceased might have been a man who was wanted by the police. The wanted man had disappeared some weeks before when he shot at several people. In view of this, it was decided to examine the head radiologically. The results of this examination also caused some surprise when it revealed tiny fragments of a shattered bullet scattered about in the skull. The deceased had evidently shot himself and fallen into the river, but no trace of a weapon was found.

FIGURE I.
X-ray picture of portion of lower jaw showing an embedded pellet of shot.

In the examination of badly decomposed and partly destroyed bodies, there is always the fear that a bullet hole or some other injury may be overlooked. Gross injury may also mislead the pathologist and mask a bullet hole.

The dead body of a man was found at the bottom of a deep quarry. An examination revealed extensive pulping of the head. The injuries to the head were consistent with his having fallen down the face of the quarry. Fortunately, a post-mortem examination was ordered. A bullet hole was found in the skull behind the right ear, and a deformed bullet of 0·22 calibre was recovered from the substance of the brain. A search of the quarry face resulted in the discovery, high up on a ledge, of a rifle of 0·22 calibre. The deceased had evidently been standing on the ledge when he shot himself. These circumstances were entirely unsuspected before the autopsy.

It is in the examination of badly burned bodies that there is always anxiety about the possibility of missing some important detail. The deceased might have been shot before he was burnt, or might have suffered some other injury before death. In these cases X-ray examination may be of great value. In the so-called "pyjama girl" case, a bullet was found in the head of the deceased in this way. The bullet had been overlooked at the original autopsy.

In some cases, when there has been strong collateral evidence that the deceased was shot before being burnt, radiological examination of the remains has not shown any evidence of shot or bullets. This finding, although negative, is of value, for it removes the fear that perhaps some more piecemeal dissection of the burnt remains might have shown evidence of a gunshot wound.

The remains of the body of an elderly woman were found in the ashes of her dwelling. They consisted of part of a badly charred trunk and some visceral remnant. The remains were subjected to post-mortem examination, and, in a small mass of blood clot, a tiny metallic fragment was found. Although it was considered that this woman had been shot dead and that the house had been deliberately set on fire, radiological and other examinations revealed no further evidence in the scanty, charred remains. The minute fragment of metal proved to be a piece of copper nickel from the jacket of a bullet. This was an important fragment of evidence. It was consistent with death having occurred from a gunshot wound.

On another occasion it was reported to the police that there had been a brawl in a house. The owner had a wound in one leg which was attributed to a bullet; it was considered that this man had been shot in the disturbance that took place in the house. Radiological examination of the leg revealed a fracture of the fibula which was due to the passage of a bullet, as there were minute metallic fragments about the bone. A search of the premises resulted in the discovery of a distorted and flattened bullet in the wall of the room where the disturbance was said to have occurred. In a split in a distorted piece of lead which was recovered there was a minute fragment of what could have been a piece of bone. This fragment was eventually examined histologically and was shown, in fact, to be bone. There was very little doubt that this was a piece of the fibula which had been carried away by the bullet in its passage through the leg.

Radiological examination of a dead body, or portion of body, may be extremely valuable in establishing identity. Examination of the jaws may show the roots of teeth, unerupted teeth, dental work, *et cetera*, which may be very helpful in identification. Evidence of old injury, such as an old fracture, may prove vital in identification. X-ray examination of the epiphyses *et cetera* may also help in the estimation of the age of the deceased.

A badly decomposed body was found buried in a shallow grave in bush country. It was the remains of the body of an elderly woman. It was difficult to estimate the age of the deceased because of the unreliability of suture closure in the skull. X-ray examination revealed considerable changes in the spine; there were pronounced decalcification and cyst formation with gross arthritis and other changes, which suggested that the woman was elderly. This fitted in with the state of suture closure, and the eventual conclusion reached about her age was partly based on these radiological findings. Extensive decomposition of the soft parts had occurred. Examination of the wrists of the deceased revealed that they had been tied together with surgical gauze; pledgets of cotton wool were also found in the pelvis. These features indicated that the body had been properly laid out after death.

In an attempt to establish the identity, the detectives were about to make a check of all the recent deaths in that part of the country, especially deaths which might have occurred in hospitals, or those after which the deceased had been properly laid out by a nurse. At this juncture, an anonymous letter was received by the police. It suggested that they should examine a certain grave in a particular cemetery, where they would find the coffin to be empty. When the grave indicated in the anonymous letter was opened, the coffin was found to be empty, and in the dirt, some distance below the surface, another piece of torn surgical gauze was found. This had apparently been tied round the ankles of the deceased. The body snatcher, or remover, had evidently tried to drag the body up to the

surface by catching hold of the gauze tied around the feet. The writer of the anonymous note was never traced, nor was the motive for the removal of the body ever revealed; but had it not been for the anonymous note, the establishment of the identity of the deceased and the cause of death would have presented some formidable problems.

Acknowledgements.

I am indebted to Inspector F. Hobley, in charge of the Police Scientific Bureau, Police Department, Melbourne, and to Inspector H. R. Donnelly, formerly chief of the Homicide Squad, for some of these data. Some of the radiological examinations were made in the X-Ray Department, Prince Henry Hospital, Melbourne, in conjunction with the radiologist, Dr. N. Long.

Reports of Cases.

A SUBNORMAL CHILD.[1]

By D. C. HENCHMAN,
Canberra.

Case History.

THE child about whom I am going to tell you is a boy who satisfied the requirements for admission to the Koomarri Special School, but who was discharged from the school after three months as an uncontrollable child.

The father had been discharged from the army because of mental defect. The mother's brother had convulsions in infancy and has always been backward. The mother's sister has also had convulsions.

The boy in question, T., was born in 1944, the first child in the family. The mother had anæmia during the pregnancy but was otherwise well. Labour lasted two days and two nights, but terminated in a normal delivery. T. was a very "good" baby, there being no difficulties with his feeding or management. At the age of six months he developed pink disease and was in hospital for a total of ten weeks; he was ill altogether for six months. He had commenced to sit up at the age of six months, before his illness. He was two years old before his got his first teeth, and he did not walk or talk until he was two years old. The mother thought he was slow because of his long illness, and she did not realize that he was backward until he went to school at the age of five years. He attended a normal school for two years, but was then discharged, as the teachers could not help him. From that time until early this year no attempt has been made to provide for his education.

The parents say that he is sometimes very difficult to manage. Some mornings he wakes up cheerful, but sometimes he is, as the mother says, "a demon to growl". He is impatient and has a bad temper. He is clean and tidy in his personal habits, and is very fussy about his clothes. He can bathe and dress himself and do simple household tasks. If given a book he tears it up, and while under observation by us he was continuously tearing up newspaper. This apparently has a soothing effect on him, as he is quiet and happy while doing it.

He is a thin, wiry child, never still for an instant. He is very active, responsive and superficially friendly. He has a tall narrow head and pronounced strabismus. Sudden jerky twitchings of both sides of his face and both hands occur, without falling or loss of consciousness. These attacks last about two minutes, and we were told that he had them nearly every day. Further examination of the central nervous system gave negative results. Physical examination of the other systems revealed no abnormality.

He can print his Christian name, can count up to five, and can draw a circle, square, or diamond, if shown the design. He cannot follow a comic and tears it up if given one. He appears to know the difference between right and wrong. We estimate that his mental age is about six years.

We made a tentative diagnosis of oxycephalic mental deficiency.

Discussion.

This boy has the right intelligence quotient and right chronological age to be admitted to the Koomarri Special School. However, after he had been attending for three months the authorities were compelled to dismiss him. He spent most of his time at school tearing up books and papers. He took little or no notice of the teacher's attempts at discipline, and if coercion was attempted he flew into a rage, kicking and scratching. He was sent home as an uncontrollable child.

This boy has the same right to a suitable education as any other child. We feel that more could and should have been done for him from an early age. Someone should have noticed that he was mentally subnormal before he reached school age. Some help could then have been given the parents in their management of him. As was mentioned previously, the parents themselves are mentally below average. The father's idea of upbringing is to shout at the boy to do something and then beat him if he does not do it. We do not think that this sort of upbringing helped, and some guidance of the parents in the boy's early years might have made a difference to his present social status.

For four years, from the age of seven to eleven years, the education authority did nothing either towards the formal education of this boy or towards promoting his social adaptation. And now, after a short trial, attempts have been abandoned again.

We realize that T. will always be a burden on the community. At the age of sixteen years he will get an invalid pension and he may finally end his days in an institution.

We believe that if as much as possible is done for these subnormal children as early as possible in their lives, it will pay long-term dividends for the taxpayers. Even if the individual cannot become self-supporting, if he can be trained to fit into our social structure less effort need subsequently be expended on his maintenance.

How this training is to be carried out in a difficult case like the one described we do not profess to know — I leave that question with the experts.

[1] Read at a meeting of the Australasian Association of Psychiatrists on October 26, 1955, at Canberra.

INFECTIOUS MONONUCLEOSIS WITH SEVERE THROMBOCYTOPENIC PURPURA.

By H. A. COPEMAN,
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INFECTIOUS MONONUCLEOSIS is a common disease complicated, on occasion, by acute thrombocytopenic purpura, which is usually self-limited (Magner and Books, 1942; Hirsch and Dameshek, 1951).

In a recent review of infectious mononucleosis (Berte, 1954), it is stated that complicating thrombocytopenic purpura is rare in severe form, but common in mild form.

This case is reported because the thrombocytopenia was unusually severe, and because the response to ACTH and direct blood transfusion was probably life-saving.

Clinical Record.

On January 24, 1954, a married man, aged twenty-two years, a metal fitter, was admitted to the Brisbane Hospital suffering from epistaxis and petechial rash. Two weeks prior to his admission to hospital his local doctor had incised an infected sebaceous cyst near the right ear. Some days later the patient had developed a sore throat and an unproductive cough. He was treated for an upper respiratory tract infection with a short course of "Procaine

TABLE I.

Date.	Hæmoglobin Value. (Grammes per Centum.)	Leucocytes per Cubic Millimetre).	Neutrophile Cells (per Centum).	Lymphocytes (per Centum).	Monocytes (per Centum).	Atypical Mononuclear Cells (per Centum).	Platelets.	Other Findings.
24. 1.54	14·6	9700	32	26	6	36	Greatly reduced.	
25. 1.54	13·7	10,000	36	12	2	50	None seen.	Bleeding time, 1·0 minute; coagulation time, 4·5 minutes.
26. 1.54	14·2	11,200	30	22	—	48	Greatly reduced.	Absolute eosinophile cell count, 23 per cubic millimetre; Paul-Bunnell test result positive to a titre of 1 in 112 (unabsorbed sera).
27. 1.54	12·8	—	—	—	—	—	——	Paul-Bunnell test result positive to a titre of 1 in 320 (following absorption with guinea-pig kidney).
29. 1.54	9·8	13,800	32	9	1	54	Only two seen in 500 red cells counted.	Eosinophile cells, 1·0%; myelocytes "B", 1·0%; myelocytes "C", 2·0%.
30. 1.54	10·1	—	—	—	—	—	——	——
1. 2.54	9·8	7200	52	13	2	28	Only two seen in 500 red cells counted.	Eosinophile cells, 2·0%; myelocytes "B", 1·0%; metamyelocytes, 2·0%.
3. 2.54	9·8	—	—	—	—	—	9000 per cubic millimetre (approximately).	Reticulocyte count, 7·0%.
19. 2.54	12·8	5000	63	25	5	4	130,000 per cubic millimetre (approximately).	Serum bilirubin content, 0·4 milligramme per 100 millilitres; eosinophile cells, 3·0%; Paul-Bunnell test result positive to a titre of 1 in 80 (following absorption with guinea-pig kidney).
19.12.55	12·9	8800	62	38	—	—	130,000 per cubic millimetre (approximately).	Reticulocyte count, 0·2%; absolute eosinophile cell count, 87 per cubic millimetre; Paul-Bunnell test result negative (presumptive and screening tests); bone marrow normal.

Penicillin", with no improvement. No sulphonamide drugs and only very small amounts of salicylates were given at this time. During the next fortnight malaise and sore throat persisted, although the patient returned to work. On the day before his admission to hospital he noticed a generalized rash, and his nose began to bleed severely. Between the ages of three and seven years the patient had suffered from mumps, measles, chicken-pox and pneumonia. When he was aged nine years he had suffered a moderately severe reaction to an injection of anti-tetanus serum. When he was aged eighteen years he had suffered from pleurisy, but no antibiotic was used to treat it. Within the last few years the patient had had all his upper teeth extracted without any excessive bleeding. There was no significant family history.

Examination showed the patient to be a young man with a purpuric rash over the whole of his skin surface and the visible mucosal surfaces. His temperature was 100·2° F. The blood pressure was 140 millimetres of mercury, systolic, and 70 millimetres, diastolic. The petechiæ were confluent in some areas, especially on his arms, so that he was covered with hæmorrhagic areas varying from a millimetre to several centimetres in diameter. In his throat, as well as petechiæ, were many patches of white exudate. The liver was just palpable on full inspiration at the right costal margin, and the spleen was easily palpated five centimetres below the left costal margin on full inspiration. There was generalized enlargement of lymph nodes, which averaged 1·0 to 1·5 centimetres in diameter. During the next two days moderate hæmatemesis and melæna and gross hæmaturia appeared, whilst the epistaxis persisted.

A clinical diagnosis was made of infectious mononucleosis with complicating thrombocytopenic purpura. The results of laboratory tests were as shown in Table I.

For the first two days after his admission to hospital the patient was reasonably comfortable, although the degree of melæna and hæmoptysis increased. On the third day, however, he became seriously ill; his pulse rate increased to over 100 per minute, he became drowsy, and large quantities of fresh blood were passed *per rectum* and all urine specimens were heavily blood-stained. Crepitations developed in his chest, associated with recurrent hæmoptysis. It was decided to attempt to arrest the phenomenon with ACTH.

On January 26 and the ensuing four days 25 units of ACTH in 5% glucose solution were given by slow intravenous transfusion. On January 28, 29 and 30, direct blood transfusions of about 500 millilitres each were given.

The degree of hæmorrhage and consequent anæmia were such that direct blood transfusions were given on three consecutive days, both to replace the blood loss and in the hope that the fresh platelets provided might prevent a cerebral catastrophe. On January 31 he looked much better, and no hæmorrhage at all was occurring. On February 3 he had a further small epistaxis. Thereafter his recovery was dramatic. On February 8 his spleen was not palpable, his palpable lymph glands were much smaller, and he was discharged from hospital.

He was examined again in December, 1955, when he was well, and had had no recurrence of symptoms. Physical examination and hæmatological studies revealed no abnormality.

Discussion.

An acute febrile illness with malaise, pharyngitis, lymphadenopathy and splenomegaly, with 50% atypical mononuclear cells in the peripheral blood and a significantly positive response to the Paul-Bunnell test, warrants a diagnosis of infectious mononucleosis. This would appear adequate to explain the thrombocytopenia and resultant purpura. It seems unlikely that we can incriminate the penicillin which the patient had received two weeks previously. He had in fact been exposed to a very dilute benzol-in-air mixture in a rubber solution tank at a local factory some weeks before the onset of his illness, but his workmates were unaffected and the local industrial medical officer considered this exposure to be negligible.

The improvement coincident with the administration of ACTH is suggestive evidence that the thrombocytopenia was allergic in origin. Dameshek's theory (Hirsch and Dameshek, 1951) that the acute self-limited thrombocytopenia following the onset of an acute infection may be an allergic reaction to that acute infection is supported.

It is difficult in this case to assess the predominant value of either the platelets given in the direct transfusion or the ACTH, because they were given coincidently. The patient was considered to be too ill for trial on one method of therapy alone. However, it should be recorded that the blood donor on all three occasions was a patient suffering from *polycythæmia vera* with a platelet count of greater than 500,000 per cubic millimetre (indirect count).

His complete recovery with the return of the platelet count to normal within four weeks places the disease among the acute thrombocytopenic purpuras.

The reticulocyte count of 7% when his hæmoglobin value had fallen from 14·6 to 9·8 grammes *per centum* could be explained as a response to blood loss.

Summary.

A case of infectious mononucleosis with thrombocytopenic purpura is reported. Treatment with ACTH and direct blood transfusion appears to have been of great benefit.

Acknowledgements.

I wish to thank Dr. W. G. Livingstone, in whose care this patient was admitted to hospital, for his helpful criticism in preparing this report. I also thank Dr. A. D. D. Pye for permission to use Brisbane Hospital records.

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Reviews.

The Diocese of Newcastle: A History of the Diocese of Newcastle, N.S.W., Australia. By A. P. Elkin; 1955. Sydney: Australasian Medical Publishing Company, Limited. 9½" × 6", pp. 854, with many illustrations. Price: £3.

WHEN in 1947 the Anglican Church Diocese of Newcastle, New South Wales, celebrated its centenary, the Bishop of the Diocese, the Right Reverend Francis de Witt Batty, asked A. P. Elkin, Professor of Anthropology in the University of Sydney, to write a history of the diocese to celebrate the occasion. The book was published at the end of 1955. The question may well be asked why a book of this kind should be reviewed in THE MEDICAL JOURNAL OF AUSTRALIA. The reply is that this book is an important historical document concerned with that part of New South Wales which lies to the north of the Hawkesbury River. Members of the medical profession are naturally interested in the history of the development from the earliest days of that part of Australia in which they work. Professor Elkin, who is an ordained priest of the Church of England and has been rector of a parish in the Newcastle diocese, holds that religion in Australia has been anything but a negligible factor in the development of Australian life and attitudes. He states that a complete study of the factors in Australian community development requires an analysis of all the religious bodies which have worked for spiritual and moral well-being. The task is too extensive for one scholar. He hopes that when the separate religious denominations have been studied historically, an historian of wide understanding and sociological perception will study the relation of religion and society in Australia since the early days.

The book "falls naturally" into three parts. The first covers the period from the earliest settlement to the formation of the Diocese—the time of convicts and gaolers, of settlers and "squatters", of chaplains, of archdeacons of Australia, and the one and only Bishop of Australia. The second part deals with the building of the Diocese under its first bishop, the far-sighted, resourceful, energetic and tireless William Tyrrell; the third with the post-Tyrrell period —that of "uncertainty, consolidation and advance". The moral condition of the colony in its early years was, to say the least of it, unsatisfactory. A petition was sent to the King in 1837, signed by 427 persons of all classes of the free inhabitants. The petitioners drew attention to "a lamentable depravity of manners and the fearful prevalence of crime". We read that Henry Parkes, later to become a leading Australian statesman, who came to New South Wales with his wife and child in order to escape from poverty in England, wrote as follows:

> I have been disappointed in all my expectations of Australia except as to its wickedness; for it is far more wicked than I had conceived it possible for any place to be, or than it is possible for me to describe to you in England.

Between 1788 and 1841 about 83,290 convicts had been transported to New South Wales. As we know, these were not felons of the worst type. Many of them made good, and when freed served the colony well; ". . . for the most part the convicts were the victims and effects of what we would now consider an unjust social and economic order, and of a period of revolutionary change in political thought and industrial organization." We need not traverse the treatment meted out to these people; to describe it is in itself degrading, and we can quite believe that Professor Elkin is right when he states that most of them were left either hopeless or stunned or else reckless law-breakers. The social condition of the colony is described. There were four classes of society. At the top were the officer class and settlers who had been officers. The second class were, like the first, few in number, and consisted of the free immigrants, who took up land, entered into trade or were schoolmasters or clergymen. The third class consisted of the emancipists or ex-convicts, who had, as was intended and hoped, become settlers or traders. The fourth class comprised the convicts, from whose ranks the third class was recruited. But "the unsatisfactory moral and social condition of the colony at the end of the 1830's was not due solely to the convicts, but also to the greed, lust for power, influence and anti-social behaviour of the officers, as a class, who were, or had been, gaolers, especially as that group constituted itself the aristocratic and ruling class, to which admissions were very carefully made". It is not to be wondered at that Bishop Broughton, the first and only Bishop of Australia, wrote in 1850 that a journey of more than 2000 miles had convinced him that "through want of additional means of grace, the whole population, rapidly increasing by immigration, was in the constant and not very slow process of deterioration, and of unimpeded decline into the lowest depths of spiritual ignorance".

It was in surroundings such as this that the Diocese of Newcastle was created. The Archbishop of Canterbury wrote on March 10, 1847, to the Reverend William Tyrrell, Rector of Beaulieu, inviting him to accept nomination as first Bishop of the Diocese of Newcastle. Mr. Tyrrell accepted and received a letter from the Archbishop dated March 24, informing him that Her Majesty had been pleased to approve his appointment. Unfortunately, lack of space will not allow anything like a comprehensive account to be given of Bishop Tyrrell and his work. The story as told by Professor Elkin (it is fully documented) is most attractive. Clergy in those days had to be physically tough and a bishop tougher than his clergy. All the work was done on horseback and the ground to be covered extended from the Hawkesbury River to Moreton Bay, Brisbane and beyond. The story is one of far-sighted heroism and should appeal to any student of Australian history, regardless of his religious persuasion. It is interesting that Newcastle was chosen as the centre for the Diocese, although its population at the time was much smaller than that of other centres in the Hunter valley. The men responsible for the plan could see the future destiny of Newcastle as a large industrial centre. Bishop Tyrrell died in harness on March 24, 1879, and his tomb is in Morpeth Cemetery. When the centenary of the Diocese was celebrated on June 28, 1947, a vast concourse of clergy and laity made a pilgrimage to the tomb, and a pulpit having been erected there, the present occupant of the See paid a tribute to his predecessor.

In this account of Professor Elkin's book succeeding bishops have not been mentioned, nor has reference been made to ecclesiastical development and spiritual values, although these are of the greatest importance in the present changing state of society. Perhaps it will be well to conclude with a statement made by our author in the last paragraph but one of the work—a statement which applies to every religious denomination in Australia—the church "must ever be vigilant. It cannot 'trim its sails' to the prevailing winds of economic or political expediency, for its principles are timeless, and through them alone will society find salvation: health and security".

Children in Hospital: Pædiatrics for the General Hospital Nurse. By Margaret M. Leach, S.R.N., R.S.C.N., with a foreword by Victoria Smallpeice, M.A., M.D., F.R.C.P.; 1956. London: Faber and Faber, Limited. 7½" × 5", pp. 160, with illustrations. Price: 9s. 6d.

THIS small book was written to provide nurses with the special knowledge about nursing sick children that they may need, when in the midst of their general hospital training they find themselves in the children's ward for a term. It does not claim to be a complete text-book of pædiatric nursing. The opening chapter is a very important one, dealing with the approach to children when they are first admitted to hospital; it emphasizes the necessity of gaining the confidence of the small child, who is almost sure to be apprehensive and frightened in the strange surroundings in which it finds itself, especially as it is cut off from its mother.

Details of infant feeding, care of the premature baby, and congenital and other diseases of the newborn are given, and the stages of normal development are described. The book then discusses diseases of all the bodily systems in separate chapters and concludes with a description of special procedures applicable to children, such as intravenous therapy in infancy, exchange transfusion and duodenal intubation.

A series of well-drawn sketches enhances the clarity of the text of this practical volume, which all student nurses could read with profit.

Postural and Relaxation Training: In Physiotherapy and Physical Education. By John H. C. Colson, F.C.S.P., M.S.R.G., M.A.O.T.; foreword by J. M. P. Clark, M.B.E., M.B., Ch.B., F.R.C.S.; 1956. London: William Heinemann (Medical Books), Limited. 5" x 7½", pp. 115, with illustrations. Price: 12s. 6d.

THE first part of this small volume is devoted to postural defects, and after these have been described, corrective exercises for them are detailed. A special series of training exercises for children, aimed at being interesting and informal, is included. The second part is concerned with relaxation training, and concludes with a chapter contributed by Dr. Maurice J. Parsonage upon "So-Called Psychosomatic Tension States", in the treatment of which the value of relaxation therapy is stressed. The author has had a wide experience as a physical therapist and remedial gymnast, and this is reflected in the essentially practical manner in which the book is written. Clearly drawn sketches illustrate the various defects and also give instructional details about remedial exercises. This little book can be read and applied in their practice by all physiotherapists and physical training instructors, for they will find in it many practical pointers that will benefit their patients or pupils.

Neurological Nursing: A Practical Guide. By John Marshall, M.D., M.R.C.P. (Edin.), D.P.M.; 1956. Oxford: Blackwell Scientific Publications. 9" x 6½", pp. 176, with illustrations. Price: 18s. 6d.

NEUROLOGICAL NURSING is probably that branch of nursing which demands the most knowledge of the subject to ensure that patients are cared for correctly, and it is therefore pleasing to see such a comprehensive work published as this one. The author points out that the first essential is good teamwork, and the team is made up of physician, surgeon, nurse, physiotherapist, occupational therapist, speech therapist and almoner, each member having a vital role to play.

Pre-operative and post-operative care is detailed, as, too, are such topics as care of unconscious patients and care of the bladder and skin; and it is certain that the illustration of a bedsore is one that no nurse would forget; much less would she wish to see the like develop on a patient in her care. All special diagnostic procedures are described, including cisternal puncture, encephalography and cerebral angiography, to mention only three. A special chapter is devoted to epilepsy and one also to passive movements and rehabilitation. Spread throughout the book are 83 drawings and photographs, each of which illustrates some specific nursing feature or procedure. These greatly add to the practical value of this volume, a copy of which should be in the hands of all nurses who work in a neurological unit.

Charles Dickens and His Family: A Sympathetic Study. By W. H. Bowen; 1956. Privately printed by W. Heffer and Sons, Limited, Cambridge. 8½" x 5½", pp. 195.

DESPITE the exacting demands of medical practice, members of our profession still find time to acquire or cultivate a refined taste for good literature. At some stage of their career many must have been tempted to read at least a few of the more famous novels of Charles Dickens, perhaps the greatest creative artist and literary genius of the nineteenth century. Lovers of Dickens may be interested enough to go further and read what W. H. Bowen has to say on the subject after probing deeply into the dark recesses of the author's private life.

Cultivated individuals throughout the world have sought to determine the true background of these novels ever since Dickens himself first began to make a study of ordinary people around him and to present them to an avid and enthusiastic public in attractive fictional garb, aptly illustrated by the cleverest cartoonists of his day. Some have tried to identify his more impressive characters with persons in real life; while others have used a penetrating insight to reveal the social evils so ingeniously veiled behind the gentle satire, enjoyable humour or heart-rending pathos of his incomparable stories.

After reading this book the question arises whether it is better to retain our fond illusions about the personality of the celebrated writer, whose highest achievement, after all, was the institution of practical social reform, efficient sanitary legislation, compulsory education and improved labouring conditions for the lower classes of English society; or whether to face the painful exercise of delving into distasteful elements in the author's private life now that factual confirmation must be hopelessly obscured by time, distortion and reasonable doubts. Unbridled speculation may be right enough on the racecourse, where disillusionment and uncertainty are merely part of the game; but at least it is definitely on record that Mr. Pecksniff was an arrant humbug, that Mr. Pickwick came to grief from skating on thin ice, and that Bob Sawyer and Sairey Gamp fell short of the high standard of conduct ordinarily expected of those devoted to the healing art.

This book obviously represents many hours of painstaking research. But the issues involved still remain clouded, and even a modern psychologist would be inclined to regard it as a well-written fairly tale.

Books Received.

[The mention of a book in this column does not imply that no review will appear in a subsequent issue.]

"Nerve Impulse: Transactions of the Fifth Conference, September 20, 21 and 22, 1955, Princeton, N.J.", edited by David Nachmansohn, M.D., and H. Houston Merritt, M.D.; 1956. New York: The Josiah Macy, Jr. Foundation. 9¼" x 6", pp. 256, with illustrations. Price: $4.50.

Contains papers and discussions on the brain stem and higher centres, the cortico-spinal system, properties of nerve impulses, the monosynaptic reflex behaviour of individual spinal motoneurons and some properties of excitable tissue.

"Ciba Foundation Symposium on Bone Structure and Metabolism", edited by G. E. W. Wolstenholme, O.B.E., M.A., M.B., B.Ch., and Cecilia M. O'Connor, B.Sc.; 1956. London: J. and A. Churchill, Limited. 8½" x 5½", pp. 310, with 121 illustrations. Price: 45s.

Deals with the details of bone structure as revealed by modern techniques as well as with certain recently described pathological states and the importance of the skeleton in exposure to radiation.

"The Army Medical Services: Campaigns", by F. A. E. Crew, F.R.S.; Volume I; 1956. London: Her Majesty's Stationery Office. 9½" x 6½", pp. 679, with illustrations. Price: 75s.

Deals with the role of the Royal Army Medical Corps in the campaigns of the 1939-1945 war in France and Belgium (1939-1940), Norway, Battle of Britain, Libya (1940-1942), East Africa, Greece (1941), Crete, Iraq, Syria, Persia, Madagascar and Malta.

"Pelvimetry", by Herbert Thoms, M.D.; 1956. New York: Paul B. Hoeber, Incorporated. 9½" x 6½", pp. 120, with illustrations. Price: $5.00.

The purpose of this book is to place before practitioners of obstetrics a practical description of variations and abnormalities of the bony pelvis in relation to labour and to describe certain diagnostic procedures by which pelvic morphology and pelvic capacity can be ascertained.

"Group Processes: Transactions of the Second Conference, October 9, 10, 11 and 12, 1955, Princeton, N.J.", edited by Bertram Schaffner, M.D.; 1956. New York: The Josiah Macy, Jr. Foundation. 9¼" x 6½", pp. 255, with illustrations. Price: $3.50.

Reports a conference designed to bring together biological and social scientists to share with each other their findings and their theories about the nature of interaction between organisms. The main subjects are "Social Structure Among Penguins", "Neonate-Mother Relationship in Goat and Man", "Kinetic Analysis of Filmed Behaviour of Children", and "The Message 'This is Play'".

"Selected Papers of Sir Gordon Holmes", compiled and edited by F. M. R. Walshe; 1956. London: Macmillan and Company, Limited. 9½" x 7", pp. 275, with illustrations. Price: 20s.

Dedicated to Sir Gordon Holmes in homage on the occasion of his eightieth birthday by the guarantors of *Brain*.

The Medical Journal of Australia

SATURDAY, DECEMBER 22, 1956.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given: surname of author, initials of author, year, full title of article, name of journal, volume, number of first page of the article. The abbreviations used for the titles of journals are those adopted by the Quarterly Cumulative Index Medicus. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

PEACE AND GOODWILL.

It is not quite two thousand years since, according to Holy Writ, shepherds near Bethlehem received a message of peace on earth and goodwill to men. Most people, whether they accept the biblical story or not, look on Christmas time as something different from other seasons of the year. It is at least a time for rejoicing, for merry-making, for the display of love and affection; at most it means a whole-hearted attempt to promote peace on earth and goodwill among men. The world has known violent upheavals of many kinds and of varying extent. In our own lifetimes we have seen "man's inhumanity to man" as an almost continuing manifestation. At the present time when national tempers rise to most unusual heights and when opinions in our own community and Commonwealth are sharply divided and even more sharply expressed, we need a leavening of the Christmas spirit more than ever. Let us look at this from two points of view—first of all the national or international and then the intense or personal standpoint.

This is not the place for the discussion of international "situations", as they are called—the occasion calls for no argument about who is in the right and who in the wrong, whether one country is making what appear to be inordinate demands on others, whether So-and-So is a safe and sound leader of his country or not, whether sectional interests of any community are being over-emphasized, and by what stroke of the pen or the sword all could be put to rights. Let us look rather at the activating motives of national behaviour. They are all, shall we say, of the earth, earthy—greed, fear, lust for power that will dominate the individual and deprive him of his freedom. This lust for power seeks even to enslave the mind of man. Greed is known to everyone and has been known since childhood. We see the small healthy looking boy with a liking for good things to eat. He will stuff himself with food and still more food and apparently enjoy it. Finally there comes a time when his stomach and the centres which control it take a hand and he is violently sick. He eats because he likes the "many tasting food", not from any idea of wilful transgression, or because he wishes to become round and tubby. Nations are not like the small boy—they do wish to add to their girth. Their acquisitions are not in the nature of a grand kleptomania; they add to their girth by taking what they want to take, and any veil of pretence offered in the name of protection or the like deceives no one, least of all the victim. Greed may be the expression of a desire for money, often in the guise of the commercial product of a particular area. This is bound up with a lust for the power that is conferred by a bulging national exchequer. It may be an occasion of fear—fear that some rival country will step in with a greater "protective" or predatory force. One may let the imagination run along these lines and the general picture will be much the same in the long run. Mention has been made of the domination of the individual so that his mind may be enslaved. Those who are interested in this aspect of the subject would do well to read "Liberties of the Mind", by Charles Morgan. He writes on mind control and points out that the system of "Possessive Control" is unlikely to be as yet operational without the support of torture, and he adds that as long as that limitation remains, "a part of the world may hope for a little while to be exempt from it"—an extremely depressing statement. He holds that on the evidence "a method of Possessive Control is passing beyond its laboratory stages". These thoughts on greed, fear and lust for power can be applied in several directions just now. Each of us in our own minds will apportion blame according to our sympathies and beliefs, but we must in all honesty ask ourselves whether any single country in the present "world picture" can be given a certificate of freedom from our three named vices. The answer is obvious. What really matters is whether we can metaphorically become like the greedy boy, whose stomach and nerve centres rebel, who is violently sick, and who can make a fresh start with ordered and orderly digestive processes.

So much for the national or international point of view; what shall we say of the intense or personal approach? Nations are made up of individuals, and each person in the community has a responsibility in what his nation does. This is true at least of those nations who are not totally enslaved. In the British Commonwealth every citizen can express his or her views. Not only this, but each has a share in forming the character of the nation. It follows that if our individual contribution is to be worth while we must each of us shed all semblance of greed, fear and lust for power. What we have to determine is what our motives are. One thing is quite certain—that the further they are removed from self and self-interest, the worthier they will be and the more effective our action among our fellows. In other words, the more likely shall we be to promote peace and spread goodwill. Let there be no mistake—and therefore the view must again be emphasized

—until every thinking member of our community adopts a truly altruistic outlook we shall not be qualified as a nation to point the way to others. If we have individually become somewhat like the greedy boy, we can produce an emesis suited to our surfeit. Let us not be too ready with uninformed criticism. J. M. Barrie in a rectorial address once advised his audience never to ascribe to an opponent motives meaner than their own. Let us aim high. If we fail it will not matter; in fact we shall be the better for having attempted a high escalade. Robert Browning wrote:

> Better have failed in the high aim, as I,
> Than vulgarly in the low aim succeed,—
> As, God be thanked, I do not.

Current Comment.

LONG-TERM CHEMOTHERAPY IN CHRONIC BRONCHITIS.

VARIOUS WORKERS, notably J. Mulder[1] in Leyden and J. R. May[2] in London, have shown that *Hæmophilus influenzæ* strains may act as pathogens in chronic conditions of the respiratory tract, and particularly in chronic bronchitis. Differential elimination of the several organisms found in the sputum in this disorder, by appropriate selection of antibiotics, indicates that the purulence of the sputum usually disappears with disappearance of *H. influenzæ* and pneumococci. The pneumococcus is always penicillin-sensitive; as it recurs in the sputum with less depressing rapidity than *H. influenzæ*, it follows that it is the latter organism which gives rise to the main problem of management. The treatment of acute exacerbations of chronic bronchitis is now reasonably clear. Large doses of penicillin, perhaps better "Estopen", may be used first, and in some cases this will suffice to eliminate both organisms. If the sputum remains purulent or mucopurulent, streptomycin may be added for about five days in doses of two grammes daily; this can be done only if there is no reason to suspect tuberculosis. An alternative is to give either tetracycline or oxytetracycline, about four grammes daily, until the sputum has become mucoid; the dose is then reduced to a level sufficient to keep the sputum mucoid. Treatment should be continued for at least ten days, irrespective of the regime employed, as the relapse rate is high. Antibiotics are useless where the sputum is of the mucoid "catarrhal" type.

Accepting the fact that there is irreversible bronchial and probably parenchymal damage, but realizing that each acute episode almost certainly increases both, we are faced with the problem of whether or not to treat patients with chronic bronchitis by long-term chemotherapy. W. H. Helm, J. R. May and J. L. Livingstone[3] reported their early experience in this field two years ago, and a second report,[4] dealing with some of the same patients, has recently appeared. Using oxytetracycline, they treated originally 17 patients, with immediate benefit to 15; this benefit was maintained for up to twenty months in some cases with continued dosage. It is important to note that 13 patients with infective asthma rather than chronic bronchitis made practically no improvement, despite the macroscopic exhibition of purulent sputum. Investigation of these patients revealed that the apparent purulence of the sputum was due solely to the presence of eosinophile cells, and no pathogenic organisms were isolated on culture. In the bronchitic group, relapse was frequent when the treatment was stopped, but otherwise the results were encouraging, especially as no serious toxic effects were found. By 1956, Helm and his colleagues are able to report several patients treated continuously for two and a half years, and in each case the treatment seems to have been well worth while. One patient, whose oxytetracycline therapy was inadvertently stopped for a fortnight, subsequently developed a strain of *H. influenzæ* resistant to the drug; the authors' experience in other cases suggests that resistance is more likely to emerge, and the clinical response to decrease, when interrupted courses are used. They point out that the benefit gained is probably due to the suppression rather than the elimination of *H. influenzæ* from the respiratory tract, together with prevention of intercurrent infections with such organisms as the pneumococci.

May and N. C. Oswald[1] describe the effects of long-term continuous chemotherapy with either tetracycline or oxytetracycline in 37 patients. Fourteen of these had been given intermittent chemotherapy for exacerbations during a previous winter; this provided a useful standard of comparison. Eleven patients showed no overall improvement for one reason or another; six were unable to tolerate an adequate dosage. Tetracycline proved rather less disturbing to bowel function, but in other respects the drugs were comparable. For both, the maintenance dose was of the order of 1·0 to 1·5 grammes daily. In many of the remaining patients the effect of treatment was dramatic. Improvement was frequently manifest in improved well-being, appetite and weight, as much as in reduction in quantity and purulence of sputum. Dyspnœa was not affected, probably because of associated emphysema, although in a few instances there was an increase in wheeze when the sputum became more tenacious. A frankly admitted risk with this form of therapy is the development and dissemination of antibiotic-resistant staphylococci, which were found at some stage in about a quarter of the patients. This and the expense involved are the two factors which must be weighed against the clear-cut benefit to the individual patient. A most significant argument advanced by May and Oswald is that nine of the patients observed over two winters lost one month's less work in six on continuous chemotherapy than they did on intermittent therapy, in spite of the fact that there was more respiratory illness generally during the winter of continuous treatment. It is indeed difficult to count the cost of health, and it is unfortunate that modern medicine is increasingly forcing doctors to try to do so.

[1] *Acta med. scandinav.*, 1952, 143: 32.
[2] *Lancet*, October 23, 1954.
[3] *Ibidem*, September 25, 1954.
[4] *Ibidem*, May 26, 1956.

INTRAPULMONARY GAS MIXING IN PULMONARY TUBERCULOSIS.

HELIUM AND HYDROGEN are not absorbed in the lungs. This property was taken advantage of by J. MacMichael[1] in order to measure the functional residual capacity of the lungs. This may be calculated, if the initial and final concentrations of helium in a closed circuit are known, when the subject has breathed from the circuit until equilibrium is reached between gas concentration in the lungs and in the spirometric circuit (oxygen being fed in at the rate at which it is used). It is but one step from this to study the rate at which the concentration changes, and the time and number of breaths taken to reach equilibrium; both reflect gas mixing efficiency in the lungs, although they are to some extent influenced by the size of the functional residual capacity, the size of the dead space and the tidal volume. Similar information can be obtained by studying the change in helium concentration in the expired air of successive breaths during the inhalation of a fixed concentration of helium. Various indices have been devised from data of both types in order to give expression to any observed inequality of ventilation; these, with the general theory of pulmonary ventilation, are fully discussed by J. C. Gilson and P. Hugh-Jones[2] in the report of their

[1] *Lancet*, October 20, 1956.
[2] *Clin. Sc.*, 1939, 4: 167.
[3] "Lung Function in Coalworkers' Pneumoconiosis", Her Majesty's Stationery Office, 1955.

work on pneumonokoniosis. In patients in whom ventilation is uneven there is an initial phase of rapid mixing and a subsequent phase of slow mixing. W. A. Briscoe[1] showed that this situation was comparable with that in a model lung in which there was a space ventilated solely by gaseous diffusion. This, in effect, is the basis of the concept of lungs composed of two spaces, one well ventilated and the other poorly ventilated; neither space exists as such. As with an index of mixing efficiency, it is no more than a useful way of giving simple expression to a complicated state of affairs. Thus, for example, it has become well known that, typically, the mixing efficiency in emphysema is poor, and the poorly ventilated space relatively large. These abnormalities have some effect on gas exchange, but, as with the functional residual capacity, the correlation with disability is not particularly high.

Using a somewhat different technique based on following the fall of helium concentration in successive expirates after a period of breathing a mixture of helium and oxygen, Emil Blair and J. B. Hickam[2] have studied gas mixing in pulmonary tuberculosis. Twenty-one patients were studied; all had moderately or far advanced tuberculosis. Among the complicating factors were surgical procedures (seven cases), pneumoperitoneum (two cases), emphysema (one case) and episodes of congestive cardiac failure (two cases). Considerable variability was found in the results, but an overall impairment of mixing was apparent. The "slowly ventilated space" ranged from 0·25 to 3·6 litres, with ventilation rates ranging from 0·12 litre per minute in the former case to 1·35 litres per minute (in a "slow space" of 1·47 litres). The time taken to eliminate helium from normal lungs by this method was four to six minutes, but in the tuberculous patients this was prolonged, exceeding ten minutes in eight instances. It may be noted that the minute volume of the patients tended to be high, in which case mixing may appear to be accelerated.

These findings are precisely those which might be expected. Blair and Hickam attribute them to underventilation of some lung regions as a result of unequal expansion (expansibility might be a more basic term), endobronchial disease and the presence of associated emphysema. In three cases no slow space was found, and in two cases the "washout time" was unusually rapid (less than four minutes); this is regarded as reflecting loss of lung volume with hyperventilation of the remainder.

No great weight can be attached to the quantitative aspects of this study, not only because of the nature of the hypotheses involved, but also because in any one case it is likely that the findings reflect hyperventilation of some parts of the lung with poor and uneven ventilation of other parts. What is particularly important from the functional aspect is that the distribution of blood should be proportional to the alveolar ventilation; if, for example, well ventilated alveoli are poorly perfused, the arrangement is clearly inefficient. Blair and Hickam point out that the effect of surgical procedures on mixing efficiency is not easily predictable; the changes in ventilation-perfusion relationships are still less predictable and far more significant. The field is an intriguing one for future study and current speculation.

MALIGNANT DISEASE IN CHILDHOOD AND DIAGNOSTIC IRRADIATION IN UTERO.

IN the hope that some clue may be discovered to the factors concerned in the high mortality from leuchæmia amongst children and also to the general problem of leuchæmia and malignant disease in early life, an environmental survey is being carried out by public health departments all over England. This will eventually cover some 1500 children who died of leuchæmia or malignant disease before the age of ten years during the years 1953-1955. As yet only about a third of the case material has been gathered, but preliminary analysis has yielded one striking result. Feeling that this should be reported without further delay, Alice Stewart, Josefine Webb, Dawn Giles and David Hewitt, from the Department of Social Medicine, University of Oxford, have prepared a preliminary communication on the subject.[1] The investigation has involved the collection of information by a doctor through personal interview with the mothers of all children certified as having died from leuchæmia or malignant disease during the three-year period under review, and also in each case by the same doctor with the mother of a control child of the same age and sex, chosen at random in the district in which the affected child's parents lived when the death occurred. For particular reasons this preliminary analysis is focused mainly on the X-ray histories, and Stewart and her colleagues have prepared a table showing the numbers of cases and of controls in which there was a history of irradiation of the mother or of the child. It also gives the number of children who received antibiotics or sulphonamides before the onset of the fatal illness or the equivalent date. The figures cover diagnostic X-ray examination of the mother in the ante-natal period and before conception, as well as therapeutic exposure of the mother to X rays before conception of the child, and exposure of the affected or control child after birth to X rays for therapeutic, diagnostic or shoe-fitting purposes. The figures for the affected children and the controls are substantially similar with one notable exception—namely, the incidence of X-ray examination of the mother for diagnostic purposes during the ante-natal period. Of the 269 children who had died of leuchæmia, the mothers of 42 had undergone such a diagnostic X-ray examination during the relevant pregnancy; for the corresponding control group, the number of mothers was only 24. Of the 278 children who had died of other malignant diseases, the mothers of 43 had undergone such an examination; the figure for the control group was only 21. For the total groups of 547 children who had died from malignant disease and 547 controls, the figures for diagnostic ante-natal X-ray examination of the mothers were respectively 85 and 45.

Stewart and her colleagues point out that it has been known for some time that leuchæmia and cancer may follow excessive exposure to radioactive materials, that the immediate ill-effects of irradiation are disproportionately great when the whole body is exposed, and that therapeutic irradiation of pregnant women is liable to cause microcephaly and other congenital defects in the fœtus. More recently, evidence has been produced to show that radiotherapy can cause leuchæmia in adults and cancer in children, and that the dose of irradiation received by the fœtal gonads during diagnostic pelvimetry may be harmful. These latest figures suggest (it is too soon to say that the point has been demonstrated) that diagnostic X-ray examination of the mother may cause leuchæmia or cancer in the unborn child.

ABRASIVE TREATMENT FOR SKIN BLEMISHES.

VARIOUS METHODS have been adopted for the removal of scars and other skin blemishes by abrasion. A major step forward was made in 1953 when Abner Kurtin[2] described his experience with a motor-driven rotating brush of stainless steel wire. From his experience over a period of four years in the treatment of 273 patients with acne scars and other skin defects, Kurtin was able to describe the method as "a simple office procedure done under local anæsthesia which employs a safe abrading device and which permits delicate control in a bloodless field". He reported that in all cases except one, healing had occurred without complication. The healed skin was soft and pliable. It was fresh in appearance and had shown no evidence of cicatrization. There had been no evidence of margination, and skin pigmentation had returned to normal in the

[1] *Clin. Sc.*, 1952, 11: 45.
[2] *Am. Rev. Tuberculosis*, 1956, 74: 343.

[1] *Lancet*, September 1, 1956.
[2] *Arch. Dermat. & Syph.*, October, 1953.

entire series of white patients. Several darker-skinned patients of Latin descent had been treated with no occurrence of pigmentary change. After varying periods of observation, the skin had remained well and there had been no regression of appearance. Kurtin made the comment that it might take several hundred planings before the operator could develop a sense of dexterity and security. However, once the technique had been mastered, planing could be carried out rapidly as an office procedure. At the same time, he offered a warning against overenthusiasm, particularly on the part of the patient, and stated that in many cases, despite pressure from the patient, further work had been discontinued when it was felt that the magnitude of the procedure outweighed the possible benefits.

The procedure is in no way to be disparaged on this account, as it undoubtedly produces valuable results. From their experience of the method, John C. Belisario and M. T. Havyatt[1] have found that although only from 40% to 80% improvement is obtained as a rule with acne scars, the gratitude of the patients is out of all proportion to the improvement, and inferiority complexes, if present, are greatly lessened. In their paper, which was originally read at the Ninth Session of the Australasian Medical Congress (British Medical Association) in Sydney in August, 1955, Belisario and Havyatt confine themselves mostly to a detailed description and discussion of the technique as it has been presented by various workers, and as it has been developed during their own extensive experience. Their general conclusion is that for the treatment of pitted acne scarring, the scars of smallpox, chicken-pox and *herpes zoster*, and also traumatic tattoos, dermabrasion, with a revolving steel wire brush or serrated steel wheel, appears to be the method of choice today.

Likewise, Allen A. Small,[2] from his experience in some 94 cases in the past three years, is satisfied that this procedure is the best method to date for correcting the post-acne scar, as well as many other superficial skin lesions. He does not pretend that it is perfect, and the amount of improvement varies considerably from case to case. He states that the fairly sharp, well-defined, discrete, punched-out acne pit usually lends itself to good planing results, whereas the deep, poorly defined, contracture-type of pit, which appears to involve and exert traction on deeper layers of corium, usually is much harder to eradicate. The same is also true of the narrow "icepick" type of lesion. He stresses the fact that almost all the patients affected have a psychological scar as well as a physical one. It is therefore important that the dermatologist be understanding in taking the patient's history and frank in discussing the expected results. "Exaggerated claims must never be made. The procedure should always be undersold. There will be an 'improvement' but not a 'cure'."

INTERCAPILLARY GLOMERULOSCLEROSIS.

TWENTY years ago, P. Kimmelstiel and C. Wilson[3] described intercapillary lesions in the glomeruli of the kidney of patients with diabetes and a syndrome which has been called the Kimmelstiel-Wilson syndrome or intercapillary glomerulosclerosis. The lesion in the kidney is a nodular form of glomerular hyalinization. Its essential feature is a focal clumping of hyaline material, which appears to intervene between the lumina of glomerular capillaries. The fully developed clinical syndrome is characterized by diabetes, œdema, hypertension, proteinuria, azotæmia and diabetic retinopathy. Much has been written on the subject, and the specificity of the clinical syndrome has been questioned. A series of papers[4] on various aspects of the condition has now appeared and helps to bring the position up to date. P. Kimmelstiel, in discussing the present position of knowledge of the condition, points out that there are two types of glomerulosclerosis, nodular and diffuse. It seems to be generally agreed that the nodular type is specific for diabetics, and that the diffuse type, while it may occur in diabetics, also occurs in non-diabetic patients. The hyaline material deposited under the epithelium in the parietal layer of Bowman's capsule is a protein-carbohydrate lipid mixture in the nodular type. It is suggested by H. Mendelow and G. Brill that *diabetes mellitus* affects the metabolism, not only of glucose, but possibly of all the more complex structural mucopolysaccharides, and mucoproteins, of which the capillary basement membrane is only an example, and that the nodules in the nodular glomerulosclerosis are an indication of this disturbance. Mendelow and Brill found in 109 post-mortem examinations of diabetic subjects 35 cases of intercapillary glomerulosclerosis. In only nine of these cases had the subject shown hypertension, albuminuria and œdema during life.

Much discussion has gone on about the possibility of diagnosing the glomerular change during life. Other forms of glomerulosclerosis may be associated with symptoms similar to those found in the Kimmelstiel-Wilson syndrome. H. Rifkin points out that diabetic patients with arteriosclerotic heart disease or hypertensive cardio-vascular disease or various forms of nephritis may show similar symptoms, but post-mortem examinations show no nodular glomerulosclerosis. J. Berkman draws attention to a relatively simple laboratory procedure which has allowed the selection, during life, of those patients in whom one can with a reasonable degree of assurance expect to find nodular glomerular hyalinization histologically. This is the finding in the urinary sediment of doubly refractile intracellular lipids containing cholesterol as well as sudanophilic fat. Rifkin points out that this finding is relatively non-specific, but when properly correlated with other clin'cal data it is a valuable diagnostic aid. Renal biopsy has been used for diagnosis. A positive finding is most rewarding; a negative one does not exclude the diagnosis, for the fragment of kidney obtained for biopsy may not be representative of the kidney parenchyma.

Quite often well-marked kidney changes are found *post mortem* without clinical findings during life, probably because insufficient attention is given to relatively small changes. As this syndrome now ranks among the foremost as a cause of death in diabetic patients, it is important to determine what constitute the earliest clinical signs. Perhaps repeated use of the ophthalmoscope to discover the early stages of retinal microaneurysms may give valuable information. However, not all patients with retinal microaneurysms have characteristic glomerular nodules; although patients with glomerular changes always show the retinal changes. Rifkin points out that there is much yet to be learned, first about prevention and second about treatment. He comments: "At present no real therapeutic regime is available and one feels helpless and disturbed in the presence of these blind, bloated and uræmic victims of longstanding diabetes."

RESUSCITATION IN HEART DISEASE.

RESTORATION of the heart beat after it has stopped is a comparative commonplace of the operating theatre, but a striking variant of this situation appears in a case reported by Claude S. Beck, Elden C. Weckesser and Frank M. Barry.[1] In this case a physician who fell, apparently dead, while leaving a hospital, revived on the application of treatment directly to the heart. The patient had been troubled with precordial pain. An electrocardiogram taken at the hospital was consistent with "early posterolateral myocardial infarction". At 12.55 p.m. he collapsed while leaving the hospital. At 12.57 p.m. he was taken to the nearby emergency operating room. He was cyanosed and pulseless, and he was not breathing. Artificial respiration was employed; oxygen was given

[1] *Brit. J. Phys. Med.*, June, 1956.
[2] *Canadian M. A. J.*, August 15, 1956.
[3] *Am. J. Path.*, January, 1936.
[4] *J. Mt. Sinai Hosp.*, September-October, 1956.

[1] *J.A.M.A.*, June 2, 1956.

through a face mask; the heart was punctured with a needle. At 12.59 p.m. an incision was made between the fourth and fifth ribs, and the cartilages of these ribs were divided. There was no bleeding. At 1 p.m. a hand was inserted, and the heart was squeezed intermittently against the sternum. At 1.3 p.m. a tracheal tube was inserted in place of the face mask. The ventricles appeared to be fibrillating. The patient took an occasional inspiration. At 1.5 p.m. an electrical current was applied to the heart. Fibrillation continued. At 1.8 p.m. a further electrical shock was given. A needle was placed in a vein of the foot for the administration of fluid. The pericardium was opened. Coarse fibrillation of the ventricles was noted. Two more electrical shocks were applied without success. At 1.25 p.m. the gauge on the electrodes was wetted with saline solution to make better contact, and a current of three amperes was passed through the heart for two seconds. The heart recommenced to beat. Digitalis was given intravenously. The blood pressure was now normal and remained normal. Hæmostasis was attended to. The wound was closed after drainage had been provided for. An electrocardiogram was taken at 1.37 p.m. The patient did not recover consciousness for three days. He then had periods of confusion, disorientation and excitement over a period of twenty-four hours. One week after his collapse he was cheerful and normal. He remained in hospital for eleven days. Subsequently the wound had to be reopened because of infection in the cartilage. Healing was then uneventful. At the time when the report was written the patient was feeling fit to resume his work as a medical practitioner.

Beck, Weckesser and Barry state that the death factor in coronary artery disease is often small and reversible. They compare it to turning the ignition switch of a motor-car or stopping and starting the pendulum of a clock. In their view about 90% of deaths are due to "electrical instability", the remaining 10% to muscle failure. Electrical currents are produced in the heart by differences in the oxygen content of contiguous masses of muscle. It is these currents that kill most people with coronary disease. It is pointed out that this one experience indicates that resuscitation is possible in apparent death from heart attacks and may be practicable outside as well as inside a hospital.

NEOMYCIN NEPHROPATHY.

THE antibiotic neomycin was isolated in 1949 by Waksman and Lechevalier from a strain of *Streptomyces fradiæ*. Since that time various investigators have reported its effectiveness against a wide range of both Gram-positive and Gram-negative organisms. It has been found to be a useful agent for local application in the treatment of cutaneous bacterial infections. It has given excellent results in pre-operative preparation of the intestine, since there is very little absorption of this antibiotic through the gastro-intestinal tract. In addition it has proved useful in the management of stubborn urinary tract infections. Unfortunately, as L. W. Powell and J. W. Hooker[1] point out, clinical studies have shown that prolonged parenteral administration produces severe ototoxic and nephrotoxic effects; therefore its parenteral use must usually be avoided. In occasional cases, however, some risk must be taken if no other antibiotic is effective—for example, in the management of severe endocarditis. The ototoxic effects of prolonged intramuscular therapy with neomycin can be alarming; in several cases permanent deafness has come on suddenly and without warning. The nephrotoxic effects, however, often present the warning signs of albuminuria, granular casts in the urine or a rise in the blood urea level. In a case reported by Powell and Hooker, a patient suffering from bacterial endocarditis was treated by intramuscular administration of neomycin in divided doses to a total of 1·0 gramme per day for nineteen days. Then the therapy was stopped because the patient suddenly became deaf. The patient had intermittent episodes in which albuminuria and granular casts were detected in the urine, but these had also been present before treatment began. He died three months and seventeen days after the therapy was stopped. It was considered that the tubular damage found at autopsy was at least in part contributory to his death, and that his final cardiac decompensation was aggravated by the renal lesions.

[1] *J.A.M.A.*, February 18, 1956.

RENAL NEOPLASMS AND THE PAPANICOLAOU DIAGNOSTIC TECHNIQUE.

THE early detection of neoplastic changes in the kidneys is of great importance, but as H. M. Weyrauch and J. C. Presti[1] have pointed out, it presents one of the most difficult problems in urological diagnosis. Difficulty particularly arises in patients with obscure hæmaturia that may, or may not, be localized to one kidney, when pyelograms are normal or show doubtful filling defects. Weyrauch and Presti hoped that the Papanicolaou cytological technique, which has served well in other fields, might be a useful diagnostic aid for obscure renal neoplasms. However, the pitfalls of the method in their experience have proved so disconcerting that these warrant serious consideration. They have collected four cases in which "false positive" results from examination of smears, interpreted by pathologists well versed in the Papanicolaou technique, led to the performance of nephrectomy for what later proved to be only benign lesions. A positive result is called "false" when cytological study shows what are considered malignant cells but later pathological examination fails to confirm this serious diagnosis. It should be remembered that this kind of study depends on cells becoming exfoliated into the urine. Most renal neoplasms are adenocarcinomata arising in the parenchyma. They do not invade the excretory tubules or renal pelvis until late in their development, when urographic diagnosis is obvious. Neoplasms of the renal pelvis are more likely to exfoliate, but they constitute only about 10% of all renal neoplasms. There are many and varied cytological difficulties in diagnosing the types of cells exfoliated from different parts of the urinary tract and appearing in the urine, and Weyrauch and Presti therefore outline stringent criteria for positive diagnosis by this method.

[1] *J. Urol.*, March, 1956.

AN INDIRECT EFFECT OF MYXOMATOSIS.

CAMARGUE is an island at the mouth of the river Rhône, where extensive rice-fields have been established. These are the scene of great human activity from May to October—planting to harvest; otherwise the inhabitants consist largely of animals and migratory birds—waders, herons, flamingos and egrets. These birds, many of which have found their refuge there and have been protected, have also been suspected of being implicated in the spread of leptospirosis from the Ebro delta in Spain.[2] A short note in *La Presse médicale*[3] calls attention to an unexpected result of the spread of myxomatosis among the rabbits in this territory. This occurrence is seen as a grave danger to the rare birds that have sheltered there, because hunters, deprived of their usual prey, have turned their attention to the game to be found on the water. This is a pity; enthusiastic hunters the world over appear to have an irresistible urge to kill no matter what. At the same time, if the birds are discouraged from frequenting the area, it will be interesting to see what effect this will have on the chain of evidence connecting leptospirosis in the Ebro delta with that occurring in the rice-fields of Camargue.

[2] M. J. AUSTRALIA, March 5, 1955.
[3] *Presse méd.*, September 8, 1956.

Abstracts from Medical Literature.

SURGERY.

The Pathogenesis of So-called Fat Embolism.

S. R. JOHNSON AND A. SVANBORG (*Ann. Surg.*, August, 1956), on the basis of experiments on rabbits and a survey of the literature on the clinical experience with so-called fat embolism, consider that fat emboli do not consist of marrow fat torn loose through injury. They state that it seems likely that the occurrence of these fatty droplets causing emboli is one change in a complex of symptoms comprising shock, tissue injuries and a change of the emulsification of the serum lipids. It is not certain that the occurrence in the capillaries of fat colourable with Sudan stain is of any clinical importance. They point out that the frequency of fat embolism is not proportionate to the quantity of lipids in the serum, but that it is probably a symptom of a qualitative change of the serum lipids.

Polyposis of the Colon.

C. FLOTTE, F. O'DELL, JUNIOR, AND F. COLLER (*Ann. Surg.*, August, 1956) report a series of patients observed at the University of Michigan Hospital in the past twenty years. They were 40 patients with polyposis of the colon, who were treated with either total or subtotal colectomy. Twenty patients of this series were found to have carcinoma of the colon at operation. Four patients who underwent subtotal colectomy subsequently developed carcinoma in the rectal segment. Nineteen patients are alive and well without malignant change. The authors conclude that polyposis, though originally a benign yet precancerous disease, must always be considered as a malignant disease and treated accordingly.

Inguinal Hernia in Female Infants and Children.

C. KRISTIANSEN AND W. SNYDER JUNIOR (*West. J. Surg.*, September, 1956) state that infants and children tolerate surgical repair of a hernia very well, and that there is a negligible mortality. Consequently they feel strongly that surgical operation should be performed as soon as the hernia is discovered in healthy infants and children. The age of the infant should be no deterrent to operative intervention, particularly as the incidence of incarceration is highest in the first year of life, especially in female infants, in whom incarceration occurs five times as frequently as in male infants. The authors consider that in most cases of infant hernia high ligation of the sac only is necessary without repair.

Intussusception in Adults.

A. ROPER (*Surg., Gynec. & Obst.*, September, 1956) discusses intussusception in the adult, which he states is an unusual but not rare condition. From 1947 to 1952 there were 122 further cases reported in the British and American literature. The author discusses these and 12 cases from the Department of Surgery of the Post-graduate Medical School of London, which occurred in the period from 1939 to 1954 inclusive. Classified according to ætiology the distribution of the 134 cases fell into the following groups: true idiopathic ætiology, 18; due to known cause other than tumour or Meckel's diverticulum, 18; due to Meckel's diverticulum, 7; due to benign tumour, 42; due to malignant tumour, 49. The author discusses the history, diagnosis, pathology and management of intussusception.

Congenital Intrinsic Duodenal Obstruction.

T. MOORE (*Ann. Surg.*, August, 1956) reports the collected experience at the Indiana University Medical Centre with 32 cases of congenital intrinsic duodenal obstruction, either stenosis or atresia. In this series, symptoms of complete obstruction from birth were encountered in all cases of atresia and in one-half of those of stenosis. Atresia was found most frequently in cases of proximal duodenal obstruction, whereas a distal lesion was more likely to be found in cases of stenosis. The author states that a plain X-ray film of the abdomen was regarded as the most reliable single diagnostic measure. Treatment was mainly by the operation of duodeno-jejunostomy, but a few patients underwent gastro-jejunostomy. In the 32 cases there were only three deaths, two of which involved premature infants with additional congenital anomalies. The author emphasizes the importance of careful pre-operative and post-operative care of these babies.

Restoration of Blood Flow in Acute Arterial Insufficiency.

R. SHAW (*Surg., Gynec. & Obst.*, September, 1956) reports cases of acute arterial insufficiency due to thrombosis of atherosclerotic vessels and arterial embolization with extensive secondary thrombosis. The patients were treated in emergency by reestablishment of arterial continuity with special attention to the removal of secondary thrombi. In this way the limbs of many patients were saved, and the author attributes this not only to removal of a primary embolus but also to removal of the secondary long thrombus running down the length of the vessels. In order to remove this secondary thrombus several incisions had to be made into the arteries at different levels in the limb. The author points out that restoration of normal arterial flow should be the primary objective in the treatment of acute arterial occlusion.

Neurilemmoma of Facial Nerve Presenting as Parotid Gland Tumour.

D. ROOS, L. BYARS AND L. ACKERMAN (*Ann. Surg.*, August, 1956) report a series of six cases of neurilemmoma of the facial nerve mimicking mixed parotid tumour. They state that there is a danger that these may be misdiagnosed from the histological picture, especially if a frozen section is examined; so that the surgeon may consider that he is dealing with a malignant tumour and perform needless mutilating surgery. At operation these tumours are found to be intimately associated with the facial nerve. The treatment required is local excision only; even partial sacrifice of the facial nerve is not warranted. Recurrence of the mass is extremely rare even after complete removal.

Aneurysms of the Common Carotid Artery.

P. NEMIR, JUNIOR (*Ann. Surg.*, August, 1956) reports that a fifty-five-year-old man underwent resection of a large aneurysm of the right common carotid artery, followed by the restoration of arterial continuity by primary anastomosis. At operation the right common carotid artery was occluded for twenty-one minutes. A left hemiparesis was present when the patient recovered from the anæsthetic, but these signs cleared within five hours. The author states that from the case reported and from those of others, it appears that there is no pre-operative test to determine the adequacy of collateral circulation which is absolutely trustworthy. It is probable that under normothermic conditions and certainly under hypothermic conditions, carotid occlusion may be safely tolerated for longer periods of time than was formerly thought, provided the circulation is reestablished.

Acute Cholecystitis.

C. CAVANAGH AND E. PARKHURST (*Ann. Surg.*, August, 1956) report a five-years survey of acute cholecystitis treated at the Rhode Island Hospital. As a result of this they conclude that early surgical intervention for acute cholecystitis in patients under the age of seventy years is a safe and effective method of terminating the disease. They state that complications are rare, the period of hospitalization is short, and the mortality rate is in the neighbourhood of 1%. On the other hand, patients over the age of seventy years in this series ran a serious risk when subjected to early operative management. Complications were frequent, and the mortality rate was in the neighbourhood of nearly 20%. However, the mortality rate following elective cholecystectomy in patients over seventy years of age was less than 4%. Consequently the authors state that whilst early operation is safe in acute cholecystitis in patients under seventy years of age, it is not safe in patients over seventy years, who should be treated by medical care followed by an operation of election.

Carcinoma of the Rectum and Rectosigmoid.

C. W. MAYO AND O. A. FLY (*Surg., Gynec. & Obst.*, July, 1956) present the results of a study of 1146 patients with carcinoma of the rectum and rectosigmoid treated by anterior resection, by one-stage combined abdominoperineal resection or by posterior resection. They conclude that the results of these five-year survival studies in the controversial group (that is, patients whose lesions are located between six and fifteen centimetres from the dentate margin) indicate that a sphincter-pre-

serving procedure, such as anterior resection, is as curative as is one-stage combined abdomino-perineal resection or two-stage posterior resection.

Fracture of the Femoral Neck Following Irradiation of the Pelvis.

E. RALSTON (*Surg., Gynec. & Obst.*, July, 1956) states that the incidence of femoral neck fracture following pelvic irradiation for carcinoma has been reported as varying between 1% and 2% of cases. This incidence is high enough to make one suspect that any person who complains of hip pain following such treatment has a fracture of the femoral neck. This fracture may not be apparent on the first X-ray examination, and in fact may not be seen for some weeks. The treatment is that of an ordinary femoral neck fracture.

Surgical Repair for Atomic Radiation Injuries.

J. B. BROWN AND M. P. FEYER (*Surg., Gynec. & Obst.*, July, 1956) report on the surgical repair of the first known group of atomic radiation injuries without thermal injury. The result was that no amputations of fingers have been necessary, and all the patients are back at full-time occupations. These injuries were injuries to the hand, which were caused by pure atomic radiation, without thermal injuries of atomic origin. The authors state that if such patients survive, this series proves that the local injuries caused by atomic radiation may be successfully repaired surgically.

Œsophageal Stricture.

L. MACLEAN AND O. WANGENSTEEN (*Surg., Gynec. & Obst.*, July, 1956), from a series of patients with lower œsophageal stricture and ulceration, due to acid regurgitation, show the benefit of subtotal gastrectomy in order to reduce the amount of secretion of acid and pepsin. They point out that these lower œsophageal strictures are often accompanied by peptic ulceration, and that the cause of these strictures is regurgitation of acid from the excess acid produced in the stomach. Follow-up investigation after gastrectomy showed the reestablishment of reasonably normal œsophagograms. The passage of dilators also showed that the œsophageal lumen was remarkably increased in size. For œsophageal stricture due to concentrated lye or acids, the authors recommend œsophageal resection, with intrathoracic or even cervical œsophago-gastrostomy. They state that this operation is of much more benefit to patients than repeated dilatations.

Thoraco-lumbar Sympathectomy and Splanchnicectomy for Chronic Relapsing Pancreatitis.

R. PFEFFER AND J. HINTON (*Surgery*, August, 1956) describe five patients who were treated by thoraco-lumbar sympathectomy and splanchnicectomy (two bilateral, three unilateral) for the relief of intractable abdominal pain resulting from chronic relapsing pancreatitis. After an average follow-up period of three years all patients were clinically well and free of abdominal pain. Pre-operative and post-operative studies of the exocrine function of the pancreas in each instance by the secretin-duodenal drainage test revealed that in three patients a decline in the response of the pancreas to the hormone secretin and in one patient slightly improved pancreatic function tests; the fifth showed no change.

Outcome of Surgery for Ulcerative Colitis.

B. N. BROOKE (*Lancet*, September 15, 1956) had operated on 131 patients with ulcerative colitis to the end of 1955; 126 had had elective operations (117 excision and permanent ileostomy and nine resection and anastomosis of the ileum to the rectum). There were 15 operative and late deaths, representing a mortality of 12%. The majority of the late complications of the operation arose in connexion with the ileostomy. The author advocates eversion suture of the mucosa to skin to reduce the incidence of stenosis. When necessary he revised the ileostomies, so that the patients could use an adherent ileostomy bag. A follow-up investigation, extending to five years and longer in over a third of the survivors, indicates that ileostomy should no longer be dreaded as an impediment to a full, normal life. It restores patients with ulcerative colitis to full work, full weight and an enjoyment of ordinary pastimes. In about half the patients of this series the diet had to be restricted slightly. The author states that resection and anastomosis with preservation of the anal sphincters was less satisfactory in this series than excision and permanent ileostomy. This was because the disease tended to recur with its complications in the portion of the rectum saved.

Thyroiditis.

J. HENDRICK (*Ann. Surg.*, August, 1956) points out that thyroiditis is frequently encountered in the management of diseases of the thyroid gland. He has adopted the following clinical and pathological classification of thyroiditis: (i) Acute thyroiditis—(*a*) acute non-suppurative thyroiditis, (*b*) acute suppurative thyroiditis. (ii) Chronic thyroiditis — (*a*) Hashimoto's disease (lymphadenoid goitre), (*b*) granulomatous or giant cell type, (*c*) Riedel's struma. Acute non-suppurative or suppurative thyroiditis in this series frequently followed an upper respiratory tract infection and was manifested by tenderness and pain in the region of the thyroid gland with elevation of temperature and local evidence of inflammation. The suppurative type of thyroiditis required drainage of the abscess. Symptoms of the non-suppurative thyroiditis were not as severe as those of the suppurative type. Medical management was used—that is, antibiotic chemotherapy and radiation therapy. However, when sufficient response was not obtained, thyroidectomy was necessary. So far as chronic thyroiditis was concerned in this series, Hashimoto's disease was more frequently encountered than the other types of chronic thyroiditis. The author considers this to be a degenerative disease, in contrast to the other forms of chronic thyroiditis, which he considers to be of inflammatory origin. Granulomatous or giant-cell thyroiditis is of unknown ætiology and is characterized by a protean clinical course, lasting for months to years, but always resulting in permanent damage to the function of the thyroid gland. Riedel's struma was the least frequently encountered type of chronic thyroiditis in this series and was produced by a chronic inflammatory process involving one or both lobes of the thyroid gland and surrounding structures. The ætiology of this condition is unknown. So far as the treatment of chronic thyroiditis was concerned in this series, this depended upon the symptoms present and was governed by the fact that this disease must be differentiated from carcinoma. For Hashimoto's disease, the author preferred thyroidectomy as the treatment of choice. For granulomatous thyroiditis, if the symptoms were mild, he administered desiccated thyroid extract to relieve the stress on the injured thyroid epithelium; but if the gland became large, he performed thyroidectomy. For Riedel's struma he advised no treatment unless the patient was suffering from symptoms such as tracheal constriction, in which case he advised thyroidectomy. He no longer uses irradiation therapy in the treatment of Hashimoto's disease or granulomatous thyroiditis, as he considers that this only increases the fibrosis in the gland. He found that ACTH and cortisone had no value in the treatment of any form of thyroiditis.

Carcinoma of the Colon and Rectum with Chronic Ulcerative Colitis.

R. THORLÅKSON (*Surg., Gynec. & Obst.*, July, 1956) describes 12 cases of carcinoma of the colon and rectum found in 182 consecutive colectomies for acute and chronic ulcerative colitis at Saint Mark's Hospital, London, between 1949 and 1955, inclusive. The author states, as a result of study of this series, that carcinoma associated with ulcerative colitis occurs from ten to fifteen years earlier than in the general population. The incidence of carcinoma in patients who had been affected by ulcerative colitis for ten years or more was much higher than in patients of the same age and sex who had not had ulcerative colitis. The policy of earlier colectomy for ulcerative colitis, adopted in recent years at Saint Mark's Hospital, has improved the prognosis of patients who develop malignant growths in the colon and the rectum associated with this disease. Strictured areas in chronic cases of ulcerative colitis should be closely watched, because strictures may prove to be the earliest evidence of malignant change. It is noted, however, that some strictures may be due to simple muscle spasm and others to fibrosis alone.

Colon Polypi and Unexplained Rectal Bleeding.

G. TYLER (*West. J. Surg.*, July, 1956) states that rectal bleeding, not readily explained by obvious anal lesions or carcinoma of the colon, is nearly always due to colonic polypi. He reviews 41 cases in which the presence of the polypi was proved at laparotomy. He states that by combining sigmoidoscopy, barium enema examination and air-contrast study, and finally laparotomy, with at times direct endoscopic examination, diagnostic accuracy can approach 100%.

British Medical Association News.

SCIENTIFIC.

A MEETING of the Victorian Branch of the British Medical Association was held on July 4, 1956, at the Royal Children's Hospital, Melbourne. The meeting took the form of a series of clinical demonstrations by members of the medical staff of the hospital.

The Effects of Corrosive Poison on the Œsophagus.

DR. RUSSELL HOWARD and DR. PETER JONES presented cases of œsophageal stricture due to corrosive burning.

Methods of treatment were discussed; they included the older procedure of dilatation with Tucker's bougies via a gastrostomy, and the more recently devised and less psychologically traumatizing dilatation from above with Hirst's bougies. The advantages of surgical excision of the stricture with direct anastomosis of the œsophageal ends were demonstrated, and it was pointed out that the operation could be of the greatest use from the point of view either of completely eliminating the stricture or, should it be too extensive for that, of rendering it more readily amenable to bouginage.

The supreme importance of the prophylactic treatment in such cases was emphasized. It was pointed out that if bouginage with Hirst's bougies could be commenced in the first few days after receipt of the burn, the formation of a stricture could be prevented. It was thus vital that patients should be referred to a treatment centre immediately after the ingestion of the corrosive fluid. Œsophagoscopic examination on about the third day after the ingestion of the corrosive was indicated to ascertain that burning of the œsophagus had actually occurred, as in many cases the burning was confined to the lips and mouth. Cases were discussed in which such treatment had been employed, and in which no stricture had formed despite severe œsophageal burning.

Fibrocystic Disease of the Pancreas.

DR. CHARLOTTE ANDERSON, for the Clinical Research Unit, demonstrated by means of photographs, X-ray films and protocols a group of patients suffering from fibrocystic disease of the pancreas. She said that 64 patients with that disease had been admitted to the Royal Children's Hospital during the past three years. Twenty-nine of the patients had died, and most of the deaths had occurred in patients aged under twelve months who had presented with severe chest infection. Six of the patients had presented in the neonatal period with meconium ileus, and although some survived operation, all of those patients had died under the age of six months.

Dr. Anderson said that she herself had studied a group of 39 of those patients from 35 families. Of the patients, 19 were female and 20 male. In ten of the families there was more than one case of the disease. Eleven of the patients had died. Dr. Anderson pointed out that in 11 cases the diagnosis had not been made until the patients were aged over four years. In some cases the diagnosis could probably have been made earlier; but in others there had been no respiratory symptoms of severity, and the nutritional symptoms had been minimal. Of the patients now living, ten were still aged under four years, eleven between four and eight years, and seven between eight and twelve years.

In summarizing the investigations on that group of 39 patients, Dr. Anderson pointed out that in 38 of the cases numerous fat globules were found in the stool on simple microscopic examination. Fat balance studies showed an average value of 57% absorption of fat with a range from 19% to 96%. Only one estimation was over 90%, and in that case reduction of, but not absence of, pancreatic enzymes was detected. That patient died subsequently after a characteristic chest illness, and post-mortem examination revealed fibrosis of the pancreas to a moderate degree. The other 38 patients all had complete absence of pancreatic enzymes as determined in duodenal contents obtained by intubation. In 29 of the cases a *Staphylococcus aureus* was grown from the cough swab or sputum; in two *Bacterium coli* was grown, in two *Proteus vulgaris*, in one *B. pyocyaneus*, and in four no pathogenic organisms at one examination. The X-ray examination of the chest revealed typical changes in 35 cases, whilst in four cases at the time of examination there was no clinical or radiological evidence of chest disease.

Dr. Anderson discussed several families in which there was more than one case of the disease. The families demonstrated a number of points, including the variation in severity of the illness in the one family and the lack of uniform severity of the disease on both respiratory and nutritional systems. She also demonstrated cases in which continuous or intermittent prolonged antibiotic treatment had probably lengthened life, and had also in some cases maintained good health with no persistent lung infection. The abnormally high content of sodium and chloride in the sweat of affected children was also demonstrated, and a case presenting with attacks of dehydration in hot weather was discussed. Attention was drawn to the symptoms of prolapse of the rectum in affected children, and a case presenting with that condition to a surgeon was discussed. The child had had no respiratory symptoms by that time, when he was four years old, but a history of abnormally large and offensive stools was obtained. One case showing *diabetes mellitus* as well as absence of pancreatic digestive enzymes was discussed. It was pointed out that that was a rare combination, as only two other cases had been recorded in the literature, and the combination might be coincidental.

Double Micturition Test in the Differential Diagnosis of Pyuria.

DR. ROBERT FOWLER, JUNIOR, gave a demonstration designed to emphasize the value of double micturition as a differential diagnostic test in cases of recurrent pyuria. He said that a normal child, when asked to pass urine two minutes after completely emptying the bladder at a first attempt, was unable to pass more than a few drops of urine, whereas children with urinary reflux from the bladder could do so readily, and might pass several ounces at that second attempt. The grosser the reflux, the more often could this performance be repeated. The double micturition test was a simple one which could be carried out in the child's own home, in the surgery, or in combination with micturition cystourethrography. A practitioner's diagnosis of reflux could thus be confirmed radiologically, and the series of films would show how often the child had to pass urine to empty residual urine from its urinary tract completely. Double or triple micturition was then recommended as a daily routine procedure for those patients, and would greatly reduce the incidence of recurrent urinary infections, as it did in the cases discussed.

A series of micturition cystourethrograms was shown from patients with recurrent pyuria and with reflux up one, two, three or even four ureters. Some of the ureters were megaureters, others were of normal calibre, and in the case of bilateral double ureters the combination of megaureters with normal calibre ureters in the one patient was demonstrated. That was also an example of how helpful the micturition cystourethrogram could be in demonstrating which of the ureters were culpable in a case of double ureters complicated by reflux and recurrent pyuria.

The films of one girl with bilateral megaureters and reflux demonstrated the complete sequence of triple micturition, and how that procedure succeeded in emptying the residual urine from the urinary tract.

Dr. Fowler said that although in some cases reflux was shown during the stage of bladder filling, in many it occurred only during micturition, so that cystography alone was an inadequate investigation for such patients. When reflux was suspected by the double micturition test, it was recommended that micturition cystourethrography should precede excretion pyelography. Then, if reflux was demonstrated, residual urine could be removed by catheterization as a preliminary to excretion pyelography, and would not dilute the excreted dye, which could give a misleading impression of renal function.

Talipes Equino-Varus.

DR. DAVID SCHLICHT discussed a series of patients with *talipes equino-varus* treated by the method of Denis Browne. The number of feet treated was 44, the number of good results was 39 and the number of unsatisfactory results was five. Poorly developed heels were present in all five feet in which the results were unsatisfactory. Dr. Schlicht pointed out that in the treatment of such feet the Denis Browne method was not sufficient. Soft-tissue operations, and later bone-stabilizing operations, would be required. Dr. Schlicht showed diagrams to illustrate the method of manipulation and of application of the Denis Browne splint.

Four patients were present, demonstrating the phases of the method of treatment and its results. The patients had been treated over the period 1951 to 1956.

Nasal Obstruction in Children.

DR. C. H. PYMAN showed a series of patients illustrating the common causes of nasal obstruction in childhood.

Deflected Nasal Septum.

The first patient had a deflected nasal septum. It was stressed that a submucous resection operation was justifiable in a young child who was suffering from complete nasal occlusion due to septal deflection. Normally it had been the practice to wait until a patient reached his late teens before such an operation was considered. Other factors, such as infected tonsils and adenoids, allergic rhinitis and sinusitis, were often present simultaneously. They should be dealt with before an operation was decided on.

Ethmoidal Polypi.

The second patient had bilateral ethmoidal polypi. It was emphasized that it was important to make a correct diagnosis, as that condition was frequently mistaken either for enlarged turbinates or for a deflected septum. Such patients were treated by polypectomy, and the underlying ætiological basis had to be attended to (allergy should be combated and infection eradicated).

Allergic Nasal Mucosa.

Patients with typical allergic nasal mucosa were shown. Dr. Pyman stressed that it was important to apply antihistamines in such cases, and to carry out skin tests in order to determine whether specific desensitization would be of value. However, a most important therapeutic measure was an adequate cauterization of inferior turbinates. It was thought that by that method a satisfactory nasal airway could usually be achieved more permanently than by any other means. One patient whose airway had previously been grossly obstructed was shown, to demonstrate the satisfactory airways resulting from that method. Dr. Pyman said that there did not seem to be any objection to cauterization of turbinates, as atrophic rhinitis did not occur as a sequela in such allergic cases.

Adenoidal Remnants.

Patients were shown to illustrate adenoidal remnants. A plea was made for thorough curettage of the post-nasal space, as it was probable that in most of such cases the condition was due to inadequate original removal of adenoidal tissue. In certain cases, however, regeneration of the adenoidal tissue had probably occurred, especially after operations originally performed on a very young child. It was emphasized that in a large number of such cases the diagnosis could easily be made when the post-nasal space was examined with a post-nasal mirror; a satisfactory view could usually be obtained with patience. "Decicain" spray applied to the pharynx was a useful preliminary.

Other Conditions.

Other causes of nasal obstruction discussed, although not illustrated by patients, were the possible occurrence of choanal atresia and foreign bodies. Dr. Pyman said that choanal atresia, if bilateral, was recognized in early infancy, owing to the difficulty in feeding such babies. However, if it was unilateral, it might not be recognized until the child reached the age of five or six years. A history of unilateral nasal discharge since early infancy was strongly suggestive of the condition. It was simply diagnosed by the instillation of "Argyrol" drops into the interior nares. If the condition was present, the guttæ failed to appear in the post-nasal space or pharynx.

The presence of a foreign body was always suggested by unilateral and offensive nasal discharge. It was especially common in young children.

Anæsthetic Demonstrations.

The Department of Anæsthesia presented two demonstrations. The first was one of anæsthetic circuits, instruments and apparatus as used in pædiatric anæsthetic practice. The second was a full-scale exposition of the method used for inducing hypothermia for surgical procedures in congenital cardiac anomalies. Water at 10° C. was circulated through a plastic cooling blanket surrounding the child, control being maintained by a rectal resistance thermometer, œsophageal thermometer, cardioscope, and direct-writing electrocardiograph. In most cases a body temperature of 28° C. was regarded as optimal, and thoracotomy was commenced at a temperature of 32° C., cooling being maintained during thoracotomy. It was reported that 12 children had been subjected to the technique, four of them undergoing pulmonary valvotomy under vision for pure pulmonary stenosis, the condition above all others for which that method was most valuable.

Mediterranean or Cooley's Anæmia.

DR. L. P. WAIT, DR. R. A. CHENOWETH and DR. I. NICOL presented a male Italian child, aged three years, who had been admitted to the hospital on November 22, 1954, with a history of increasing pallor of two months' duration. Both parents were New Australians and were healthy. On examination he was seen to be a pale but well-nourished boy. His heart was enlarged, but no bruits were present; his abdomen was distended. The liver was enlarged to three fingers' breadth and the spleen to one hand's breadth below the costal margin. Blood examination gave the following information. The blood was of group O(IV), and Rh-positive. The hæmoglobin value was 43% (6·1 grammes *per centum*); the white cells numbered 8000 per cubic millimetre, 46% being neutrophile cells, 45% lymphocytes and 9% monocytes; normoblasts numbered 28 in 100 white cells. Reticulocytes were 7·6% of the red blood cells. The red cells showed mild anisocytosis, poikilocytosis, polychromia, hypochromia and stippling; target cells were seen. A direct Coombs test produced a negative result. The red cell fragility test showed that hæmolysis commenced at 0·38% saline and was not complete at 0·26% saline, showing an increased resistance to hypotonic saline when compared with the normal control. (The blood of both parents showed evidence of the disease in a mild form.)

An X-ray examination of the chest revealed cardiac enlargement. An X-ray examination of the skull and long bones revealed many of the changes characteristic of Cooley's anæmia. The changes were primarily due to excessive erythroblastic activity of the bone marrow. It was thought that in the skull there was widening of the diploic space with atrophy of the outer layer. Sometimes spicules of diploic bone were arranged in a radial pattern across the widened diploic space and at right angles to the inner table. The skull changes usually occurred late in the disease. The paranasal air spaces were encroached upon and might be obliterated. The enlarged zygomata produced prominent cheek bones, giving the child a mongoloid appearance. Expansion of the maxilla and mandible might affect the dentition. The shafts of the long bones were osteoporotic and swollen. The cortex was thin. The long bones, together with the metacarpals, metatarsals and phalanges, showed a bizarre trabeculated appearance not unlike "crazy paving". The smaller bones usually showed changes early in the disease. In later life there was a tendency to bony sclerosis in some cases. Pathological fractures might occur.

The patient was given a blood transfusion prior to his discharge from hospital; his hæmoglobin value on discharge was 95%. About six weeks later he was readmited to hospital for another transfusion, as the hæmoglobin value had fallen to 25%. Three weeks later the hæmoglobin value fell to 20%, necessitating another blood transfusion. In the next six months he was readmitted to hospital seven times for blood transfusion. On one occasion the hæmoglobin value fell 30% in ten days.

On account of the rapid fall in hæmoglobin value, the child's blood was carefully checked for agglutinins by Dr. R. Jacobowitz. No abnormality was detected. On the advice of Professor McNair Scott, of America, who was on a visit to the Royal Children's Hospital, splenectomy was performed on account of the possibility of hypersplenism. The huge size of the spleen was an encumbrance to the child, and for that reason alone splenectomy was justifiable. Liver biopsy revealed moderate erythropoiesis in the liver sinusoids. A considerable quantity of iron-containing pigment was seen in the parenchymal and Kupffer cells. There was no increase in fibrous tissue. There was a post-operative rise in the number of platelets to 510,000 per cubic millimetre. Three months after operation the child required another blood transfusion, as the hæmoglobin value had fallen to 34%. He had had one blood transfusion in the past six months. His hæmoglobin value at the time of the meeting hovered about the 40% mark, but he was surprisingly well. No fœtal hæmoglobin estimation had been performed.

Congenital Hæmolytic Anæmia.

Dr. Wait, Dr. Chenoweth and Dr. Nicol showed two patients suffering from congenital hæmolytic anæmia. The first was a male infant, aged two and a half months, who

had been admitted to hospital with a history of pallor since birth. On two occasions, when aged four and ten weeks respectively, he had been noticed to be yellow, that colouring lasting for three days. Both his parents were born in England. His mother was aged twenty-nine years, and he was the first child; there had been no previous pregnancies. The baby's birth weight was eight pounds ten ounces; his weight on admission to hospital was twelve pounds eight ounces. The mother said that she herself had had attacks of jaundice every six months till the age of thirteen years; she still became mildly jaundiced every few months, but felt well. Her father and aunt were subject to similar attacks. None had had a splenectomy. The only abnormalities found on physical examination were pallor and enlargement of the liver and spleen. Unfortunately a blood transfusion prevented fragility tests from being performed. The blood taken prior to the transfusion was unsuitable for testing. Investigations of the baby gave the following results. The hæmoglobin value was 25%. The blood was of Group A(II) and Rh-positive. The direct Coombs test produced a negative result. The mother was a pale woman with an icteric tinge in the skin and sclerotics. The spleen was enlarged. Investigations on her gave the following results. The hæmoglobin value was 64% (9·3 grammes *per centum*). Examination of a blood film revealed microcytosis, polychromia and mild macrocytosis. Tests of the fragility of the mother's red cells gave the following results. Hæmolysis commenced in 0·68% saline and was completed in 0·32% saline. Hæmolysis of normal control blood commenced in 0·42% saline and was completed in 0·36% saline. The result revealed a pronounced increase in fragility. When the baby was aged three months a splenectomy was performed by Dr. F. D. Stephens. Convalescence was uneventful. Examination of sections of the spleen revealed generalized but slightly increased thickness of walls lining the sinusoids, many of the lining cells containing hæmosiderin.

The second patient suffering from congenital hæmolytic anæmia was a female infant, aged one month, who had been admitted to hospital on account of her obvious pallor. Her mother, aged nineteen years, was unmarried; it was known that she had undergone a splenectomy at the Royal Children's Hospital six years previously for congenital hæmolytic anæmia. General examination, apart from pallor, disclosed no abnormality; in particular, the spleen was not palpable. A number of investigations were carried out on mother and child. The blood of both was of group O(IV), but that of the mother was Rh-positive, while that of the baby was Rh-negative. The response to the Wassermann test of both mother and child was negative. A direct Coombs test produced a negative result. The baby's hæmoglobin value was 44% (6·4 grammes *per centum*); the leucocytes numbered 16,550 per cubic millimetre, 34% being neutrophile cells, 64% lymphocytes and 2% monocytes; the number of platelets was normal. There were 14 nucleated red cells per cubic millimetre, and moderate anisocytosis and polychromia were present. The fæcal urobilinogen content was 41 milligrammes per 100 grammes (normal, 40 to 280). No urobilinogen was detected in the urine. A blood transfusion was given, and the baby's hæmoglobin value on her discharge from hospital was 73% (10·6 grammes *per centum*). She was discharged from hospital with a view to splenectomy at the age of three months.

On her readmission to hospital her hæmoglobin value was 50% (7·3 grammes *per centum*). The proportion of reticulocytes was 7·2%. The direct Coombs test produced a negative response. The qualitative test for stercobilinogen produced a negative result. In the red cell fragility test, hæmolysis commenced at a dilution of 0·56% saline and was complete at 0·32% saline; increased fragility was thus present. A blood transfusion was again given, and the baby was operated on by Dr. M. Clark, who had performed splenectomy on her mother. At operation the spleen was found to be enlarged. The child's convalescence was uneventful. It was understood that she had been adopted. She had a splenectomy incision which would be a reminder of the congenital anomaly which she would most certainly transmit to her offspring.

Staphylococcal Bronchopneumonia: Patent Ductus Arteriosus.

Dr. Wait, Dr. Chenoweth and Dr. Nicol finally showed a female patient, aged six months, who had been admitted to hospital one month earlier *in extremis*, suffering from staphylococcal bronchopneumonia. She had been treated with tetracycline, and her response was satisfactory. She was not the normal size and weight for her age. Her birth weight was six pounds four ounces, and her weight on admission to hospital was ten pounds four ounces. Examination of the heart revealed a bruit which had the qualities characteristic of a patent *ductus arteriosus*. There was also a harsh systolic bruit in the apex region. The blood pressure was 160 millimetres of mercury, systolic, and 96 millimetres, diastolic. The femoral pulses were palpable. X-ray examination of the chest revealed generalized congestion of the lung fields. The heart was at the upper limits of normal size. Under the X-ray screen the heart was seen to be large, and there was considerable pulsation of the pulmonary artery. It was concluded that a patent *ductus arteriosus* was present, with a possible mild degree of coarctation of the aorta. It was proposed to perform a thoracotomy and ligate the patent *ductus arteriosus*.

(To be continued.)

Medical Societies.

MEDICAL SCIENCES CLUB OF SOUTH AUSTRALIA.

A MEETING of the Medical Sciences Club of South Australia was held in the Medical School, Frome Road, Adelaide, on October 5, 1956.

Pasture Composition and Ruminant Fermentation.

DR. J. MELVILLE, Director of the Waite Agricultural Research Institute, presented a communication on pasture composition and ruminant fermentation. He said that pasture associations varied greatly in botanical composition from season to season, from district to district, and from one animal management system to another. Consequently pasture herbage, which was the sole feed for sheep and cattle over many months of the year, varied greatly in chemical composition and hence in nutritive value. An important phase in the chain of complex transformations, whereby herbage was transformed into meat, milk and wool, lay in the fermentation reactions taking place in the rumen. The major end products of carbohydrate fermentation were the volatile fatty acids, acetic, propionic, butyric and isobutyric, with small amounts of C_5 and higher acids. The nitrogenous fraction of the feed was transformed largely into bacterial protein, but in the case of diets of high protein content considerable deamination occurred with consequent high ammonia concentrations in the rumen contents.

On high production pastures with protein levels ranging from 20% to 34%, ruminal levels of volatile fatty acids showed a decrease in acetic and an increase in butyric as compared with animals on typical stall-fed rations. Ammonia increased to levels in excess of 150 milligrammes per 100 millilitres of rumen contents. Those changes were significant in relation to fattening of animals, to fat production in the mammary gland, and to metabolic disorders of both sheep and cattle.

A MEETING of the Medical Sciences Club of South Australia was held in the Medical School, Frome Road, Adelaide, on November 2, 1956.

Genetic and Physiological Relations Between Host and Pathogen in Fungi.

DR. G. M. E. MAYO, in a communication on genetic and physiological relations between host and pathogen in fungi, said that the interaction between the host and the pathogen involved two genotypes but only one phenotype. Studies of the genetic nature of that interaction in obligate pathogens provided convincing evidence that for each gene conditioning host reaction, there was a specific gene conditioning pathogenicity in the parasite. The physiological mechanism to account for such high specificity was a matter of speculation and revolved round the idea of an inhibition mechanism or a complementary nutrition mechanism or both.

Genetic recombination accounted satisfactorily for the immediate origin of different strains of a pathogen where the sexual cycle was known to occur naturally, but extra-sexual mechanisms must be involved to account for cases in which sexual recombination was absent. Heterokaryosis could provide only a very limited mechanism (recombination between nuclei only) for releasing variability, especially in dikaryotic fungi. Parasexuality, however, could account for recombination between and within chromosomes of a genome; such a mechanism had been demonstrated to occur

in the facultative pathogen, *Fusarium oxysporum*. There seemed to be no reason to reject the idea that the process would be shown to occur in obligate pathogens.

Electron Microscopy of the Avian Renal Glomerulus.

DR. R. K. F. PAK POY said that electron microscopy of sections of chicken glomerulus showed them to possess a large central cell mass, occupying the hilum and the centre of the glomerulus. That was continuous with the adventitia of the afferent and efferent arterioles. Projections of the central cell mass might be intercapillary or intracapillary. In the latter position the projections were separated from the blood by a layer of endothelium. The epithelial cells were situated a little distance away from the capillary basement membrane and had large projections from which arose smaller pedicles which rested on the capillary basement membrane. The capillary basement membrane was composed of three layers and divided on the surface of the central cell mass into two components. A minor component became continuous with the intercellular material of the central cell mass, and the major component covered the surface of the mass. On the inner side of the basement membrane the endothelial cytoplasm was spread as a thin sheet and showed scattered "pores". At the hilum there was direct continuity of Bowman's capsular membrane, the intercellular material of the arteriolar advential cells, the central cell mass and the capillary basement membrane.

AUSTRALIAN ASSOCIATION OF PHYSICAL MEDICINE AND REHABILITATION.

THE eleventh annual meeting of the Australian Association of Physical Medicine and Rehabilitation was held in Melbourne from November 12 to 14, 1956.

Dr. Howard Rusk gave an address on rehabilitation, and papers were presented by Dr. M. Brous, Dr. Naomi Wing, Dr. S. G. Nelson, Dr. L. J. A. Parr, Mr. Hembrow, Dr. J. F. Drew, Dr. R. I. Meyers and Dr. L. T. Wedlick.

Clinical case demonstrations were carried out by Dr. F. May and Dr. L. Koadlow.

The following office bearers were elected: *President*, Dr. P. Benjamin; *Vice-President and President-Elect*, Dr. J. F. Drew; *Vice-President*, Dr. G. G. Burniston; *Secretary-Treasurer*, Dr. L. T. Wedlick; *Fifth Committee Member*, Dr. R. F. A. Strang.

Out of the Past.

In this column will be published from time to time extracts, taken from medical journals, newspapers, official and historical records, diaries and so on, dealing with events connected with the early medical history of Australia.

COMMENTS ON AN EXAMINATION BEFORE THE COMMISSIONER.[1]

[Dr. William Redfern to Commissioner J. T. Bigge.]

8 Feb. 1821.

I MUST beg leave here to remind you Sir of the great astonishment which you affected at my having said I had passed the usual examination before the Court of Examiners of the Company of Surgeons in London observing "Mr. Redfern you must mistake, I think they are called 'The Royal College of Surgeons'". I then explained that at the time I had undergone Examination (January 1797) they were then the "Company of Surgeons". I do now contend that my examination ought to have been noted down as part of my answer to your query, and that omitting it would convey to all those unacquainted with the History of the use and progress of the Royal College of Surgeons that I had asserted a deliberate falsehood and that I had undergone no Examination whatever. And I will further contend Sir, that from

[1] From the original in the Mitchell Library, Sydney.

DISEASES NOTIFIED IN EACH STATE AND TERRITORY OF AUSTRALIA FOR THE WEEK ENDED DECEMBER, 1 1956.[1]

Disease.	New South Wales.	Victoria.	Queensland.	South Australia.	Western Australia.	Tasmania.	Northern[2] Territory.	Australian Capital Territory.	Australia.[3]
Acute Rheumatism	1(1)	6(5)	3	..	..	..	..	..	10
Amœbiasis	..	..	..	..	..	..	..	..	..
Ancylostomiasis	1	..	..	..	..	..	..	..	1
Anthrax	..	..	..	..	..	..	..	..	..
Bilharziasis	..	..	..	..	..	..	..	..	..
Brucellosis	..	..	..	..	..	..	..	..	..
Cholera	..	..	..	..	..	..	..	..	..
Chorea (St. Vitus)	..	..	..	..	..	..	..	..	..
Dengue	..	..	..	..	..	..	..	..	..
Diarrhœa (Infantile)	10(9)	4(4)	3(1)	..	..	..	..	2	19
Diphtheria	1(1)	2(2)	..	..	2(1)	..	..	..	5
Dysentery (Bacillary)	..	..	1(1)	..	4(4)	..	..	..	5
Encephalitis	1	1(1)	..	1(1)	..	..	..	..	3
Filariasis	..	..	..	..	..	..	..	..	..
Homologous Serum Jaundice	..	..	..	..	..	..	..	..	..
Hydatid	..	1(1)	..	..	..	1(1)	..	..	2
Infective Hepatitis	72(33)	29(19)	..	7(2)	4(1)	5(1)	..	3	120
Lead Poisoning	..	..	..	..	..	..	..	..	..
Leprosy	..	1(1)	..	..	..	..	..	..	1
Leptospirosis	..	..	5	..	..	..	..	..	5
Malaria	..	..	2(1)	..	..	..	..	..	2
Meningococcal Infection	3	4(3)	1	..	..	1	..	..	9
Ophthalmia	..	..	..	..	..	..	..	..	..
Ornithosis	..	..	..	..	..	..	..	..	..
Paratyphoid	..	..	..	..	..	..	..	..	..
Plague	..	..	..	..	..	..	..	..	..
Poliomyelitis	3(1)	..	6	1	..	..	..	..	9
Puerperal Fever	..	..	1	..	..	..	..	..	2
Rubella	..	48(23)	..	91(47)	5(3)	..	..	..	144
Salmonella Infection	..	..	..	1(1)	2(2)	..	..	..	3
Scarlet Fever	4(1)	15(7)	14(2)	5(2)	1	..	..	1	38
Smallpox	..	..	..	..	..	..	..	..	..
Tetanus	..	..	1	1(1)	..	..	..	..	2
Trachoma	..	..	..	..	..	..	..	..	..
Trichinosis	..	..	..	..	..	..	..	..	..
Tuberculosis	24(16)	15(13)	14(3)	16(10)	7(4)	3(2)	..	..	79
Typhoid Fever	..	1(1)	..	..	..	..	..	..	1
Typhus (Flea-, Mite- and Tick-borne)	..	..	..	..	..	..	..	..	..
Typhus (Louse-borne)	..	..	..	..	..	..	..	..	..
Yellow Fever	..	..	..	..	..	..	..	..	..

[1] Figures in parentheses are those for the metropolitan area.
[2] Figures not available.
[3] Figures incomplete owing to absence of returns from Northern Territory.

your manner of conducting the Examination, from your appeal to your Secretary Mr. Scott to know whether he knew anything of the matter, that you intended to depreciate my moral and medical character by such omission. I shall now beg leave to add Sir, for your information that the "Barber Surgeons Company" in London was incorporated in the year 1301 that the Surgeons becoming from education more respectable, from education and other causes become ashamed of being classed with the shaving tribe and separated themselves from their Brethren of the Strop. Hence the Company of Surgeons was incorporated in the year 1745.

In process of time having arrived or thinking they had arrived at greater respectability—and when men of first rate talents and first rate education appeared among them, they become ashamed of the name Company as conveying the idea of trade and not at all that of learning and science, they solicited and received in the Year 1800—three years after my Examination a charter in which they are denominated "The Royal College of Surgeons".

Correspondence.

ROBERT SCOT SKIRVING.

SIR: I have read in your issue of the 10th instant your obituary of the late Dr. Scot Skirving. I note you include the legend that he held a master mariner's certificate—a legend that is not in accordance with the facts. About a fortnight before he died I was so fortunate as to have him for afternoon tea at my home; he then told me that he never had his master's certificate, but only a certificate which he described as a yacht master's certificate.

Yours, etc.,

R. CLIVE TEECE.

50 Coolong Road,
Vaucluse,
New South Wales.
November 14, 1956.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes *et cetera* are promulgated in the *Commonwealth of Australia Gazette*, No. 71, of November 29, 1956.

AUSTRALIAN MILITARY FORCES.

Australian Regular Army.

Royal Australian Army Medical Corps (Medical).

The provisional rank of 2/40123 Major A. P. Hanway is confirmed.

To be Captain, 3rd September, 1956, with a Short Service Commission for a period of one year: 2/40187 Francis Augustine Lilier.

Citizen Military Forces.

Eastern Command.

Royal Australian Army Medical Corps (Medical).—The provisional appointments of the following officers are terminated: Captains 2/62339 B. R. Hanley, 3rd August, 1956, and 2/217015 V. W. Bow, 6th August, 1956. 2/242983 Captain E. J. Lines is appointed from the Reserve of Officers, 10th August, 1956. 2/79392 Captain (provisionally) S. F. McCullagh relinquishes the provisional rank of Captain, and is transferred to the Reserve of Officers (Royal Australian Army Medical Corps (Medical)) (Eastern Command), in the honorary rank of Captain, 7th September, 1956. To be Majors, 15th October, 1956: Captains (Temporary Majors) 2/127883 J. T. Dunn, 2/101562 J. V. Roche, and 2/206956 G. L. McDonald. To be Captains (provisionally): 2/62339 Brian Robert Hanley, 4th August, 1956, 20217015 Verner William Bow, 7th August, 1956, F2/1217 Dorothy Grace Greening, 4th October, 1956, 2/146609 Anthony Earl Cronin, 15th October, 1956, and 2/127057 Brian Normand Purser, 18th October, 1956.

Tasmania Command.

Royal Australian Army Medical Corps (Medical).—To be Captain (provisionally), 4th October, 1956: 6/15421 Keith Sydney Goulston.

Reserve Citizen Military Forces.

Royal Australian Army Medical Corps (Medical).

Northern Command.—To be Honorary Captains: John Edward Edwards, 5th October, 1956, and Bruce Hamilton Newell and David Atcheson Spalding, 8th October, 1956.

Eastern Command.—To be Honorary Captains, 18th October, 1956: David John Roebuck and Henry Szczesny Schutta.

Deaths.

THE following deaths have been announced:

FLAUM.—Ernst Flaum, on November 30, 1956, at Adelaide.

MCKENZIE.—Stanley Arnold McKenzie, on November 30, 1956, at Melbourne.

ADAMS.—Henry Cyril Adams, on December 8, 1956, at Sydney.

CARTER.—Frederick William Carter, on December 13, 1956, at Perth.

Diary for the Month.

1957:

JAN. 7.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JAN. 8.—New South Wales Branch, B.M.A.: Council Quarterly.
JAN. 11.—Queensland Branch, B.M.A.: Council Meeting.
JAN. 11.—Tasmanian Branch, B.M.A.: Branch Council.
JAN. 14.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Medical Secretary, 135 Macquarie Street, Sydney): All contract practice appointments in New South Wales.

Queensland Branch (Honorary Secretary, B.M.A. House, 225 Wickham Terrace, Brisbane, B17): Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 80 Brougham Place, North Adelaide): All contract practice appointments in South Australia.

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